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THE
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CONDUCTED BY

H. G. KNAGGS, M.D., F.L.S. E. C. RYE.

R. McLACHLAN, F.L.S. H. T. STANTON, F.R.S.

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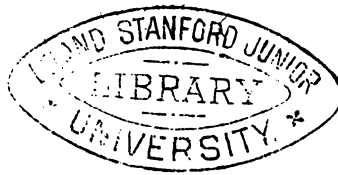
"Nature's bequest gives nothing, but doth lend."

Shakespeare.

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Entomologist's Monthly Magazine

VOLUME VIII.

ON THE APPLICATION OF THE MAXIM "*COMMUNIS ERROR
FACIT JUS*" TO SCIENTIFIC NOMENCLATURE.

BY W. ARNOLD LEWIS.

It has occurred to me, that some slight amplification of the views I ventured to express on this head at the April meeting of the Entomological Society might be made the subject of a note for the "Magazine." My suggestion is, that the maxim "*communis error facit jus*" should govern scientific nomenclature; and, in support of it, I beg to submit to entomologists the following considerations.

In the first place, changes in names bring absolutely *no benefit to science*: I place this in the front of my position. The study bestowed on books, with the express object of now and then disinterring a "prior" name, is, regarded from a purely scientific point of view, merely so much hard labour. The writers who bring out a few hundred forgotten names do science no service at all; and the publication of a single unnoticed fact in the habits of the hive-bee is of greater value to science than a reform of the nomenclature of all the Orders. Science is supremely indifferent as to the names by which its subjects are designated; and those Americans who have begun to name species "Know-nothing," and so on, may be by far the best observers, and be doing more for science than a dozen of your keen reformers of nomenclature. It is dreadfully frivolous work, I venture to think, this routing out from libraries of doubtful and obscure descriptions, and the spending of precious years in nicely balancing considerations upon the priority of a name. To give the title of scientific discovery to such a process would be to apply rich gilding to a very cheap and common sort of ginger-bread. But, besides this work doing science no service, it unhappily supplies a kind of "fatigue duty," to keep employed energies which, if better directed, would produce something worthy and profitable. A small part only of the acumen brought to bear on such studies would ere this have been supplied us in England with a scheme of the arrangement of the *Lepidoptera*; and, if that be not too much to expect, with a *Lepidopterist* able to explain it.

Further, it is a hindrance to entomological science to have paltry contentions about names continually pushed forward, and for its professors to be so constantly busied in the investigation of other men's errors. The cause of science is not advanced a jot when the confusion among old writers has been laid bare; the result of that operation, primarily, is to cast a considerable slur on the reputation of some men who, in their day, were thought to be great naturalists; but I do not know that we, the living, have become any the better for it. My proposal is *that no name* (whenever and wherever it may be discovered) *be received henceforth, to the displacement of a universally recognised name;* and this I humbly consider to be founded on strict common-sense.

Entomologists in their hearts know that disquisitions on names do not make science; and, whatever erudition may be spent on it, no such performance can raise itself above the level of learned trifling. If we suffer our entomological literature to consist, to so great an extent, of publications of this class, there will be no room in the market for better works; and our arrangement—for instance—will continue to be directed by the list-makers, who, if they know anything about it (which is always doubtful), at all events allow themselves to treat arrangement as an accessory to synonymy. If names are not science, then entomologists may please themselves about what name they will use. *Their agreement* is then all that is required to make any name right; and I hold that this is, beyond dispute, the real state of the case. The divine right of nomenclators is an invention. *The agreement* of entomologists might have been to make all people accept the first name; it might equally have been to make all accept the prettiest name, or the one with the most vowels, or (as has been suggested) the one accompanied by the best figured portrait of the insect. In fact, however, the agreement of entomologists has not been to acknowledge the earliest names, some writers having ignored all names given before 1767, while others will accept them. There is not, and never has been, any concord or serious understanding, and the present is a good time for arriving at a downright settlement of the question.

Let us take a plain, common-sense view. The root of the matter is this: it is of no interest to us by what different name an insect was once called, *so long as the students of science are now agreed on a name for it*; and this does not concern us any the more because the name we are all agreed on was not the first name given. You will not persuade the frequenters of Hyde Park to call the Row "Route du Roi" because that is the "prior" name; not even by establishing that "the Row" is

pre-occupied, because Paternoster Row had that name first given to it, and is so termed by many classical authors. Science, it is true, is everlasting ; but those who pursue it are only men.

I will not say that the books in which the old names are now being found are really not worth the study they receive ; but at all events it is sought to make us pay them a reverence which would be altogether misplaced. In a science where fresh discoveries are being made every year, the newest book ought to be the best ; and the greater number of the old entomological books are now, by comparison, very inferior affairs, whose counterpart would, in the present day, find no sale. To ascribe to one of such productions the authority of a classic would be a ridiculous piece of fetishism. In truth, those descriptive works are valuable chiefly as old books are always valuable ; and they show the growth of knowledge. Old books always interest a good many ; and I confess to entertaining a suspicion that those who make so much of these just now have taken to their studies the predispositions of the antiquary, rather than the cool scrutiny of the entomologist.

But it is suggested that justice to the first nomenclator requires that the name given by him should be adopted ; and this, being an *ad populum* argument, is the only one whose influence with entomologists I have at all feared. The very "injustice," however, which our rule would do, is done already by some of the most enlightened of our opponents.

" *Vivere fortes ante Agamemnona* "

—and learned men wrote before Linné. But, while the brave who lived too early for Homer died and made no sign, the entomologists who preceded Linnæus have left us the records of their labours. There is no reason at all (which, as I think, will bear a breath of discussion) why the work of these men should be passed over ; and I am at a loss to know how the advocates of these everlasting changes reconcile their demand for "justice" to the "old" authors with their abrupt refusal of it to those older still. Mr. Kirby, in particular, is most stern in his dealings with the writers who so far forgot themselves as to publish books before 1767. Their indecent haste to enlighten the world receives punishment with very short shrift. In a letter which I have had the pleasure to receive from him this month, he gives me his judgment in these words : " It seems to me that to go beyond 1767 would " overturn the very foundations of our scientific nomenclature, and " make us take the name *principissa* for *Lathonia*, from the first edition " of the 'Fauna Suecica ;' call the mole-cricket *Gryllo-talpa*, *Mouffet* (or, " perhaps, Aristotle ?), and put ourselves hopelessly to sea. I advocate

" the most wholesale changes on sufficient grounds ; but we must draw " the line somewhere." Now, if we must draw the line somewhere, why not draw it with me at June 1st, 1871 ? The whole basis of such a principle is the *accord* of entomologists, and Mr. Kirby can only invite their consent to a line being drawn at the epoch he names. I invite their consent to a line being drawn at another. The question, then, depends merely on the balance of convenience and expediency. Directly you get to "drawing lines" anywhere, there is no other consideration : "justice to old authors" has then been already thrown overboard, and expediency remains the only test ; and it is precisely when you come to expediency that our maxim gathers all its laurels.

It is expedient to have certainty in nomenclature, and it is expedient to have that certainty at once. It is expedient to stop the flow of lists whose *raison d'être* is the introduction of a few new names, but which degrade the science by dictating unexplained changes.

It is expedient to have no more "synonymy," a word which has now lost all its original meaning. When, out of chaos, "synonymy" was born, it served a very useful object. Then, six persons called the same insect by as many different names, because they used different books. All the descriptive works on entomology were costly, and few people could possess more than their one author. Then, entomologists of different countries knew nothing of each other's books, and there was real confusion in the names of species and of genera. In short, the "error" among entomologists was then not "*communis* ;" the majority knew nothing of any other name than that which they themselves used. The case is now so altered, that "synonymy" does not any longer answer its former function. All entomologists use one name in the vast majority of cases. There is no real confusion, even if different names are used ; as, in the very few cases of doubt, entomologists know and use both the names (e.g., *Davus* and its synonyms), and no list-writer would be much of a guide in such contested cases as those. The evil in fact now is felt in quite the opposite direction to that in which it once showed itself. Of old, entomologists knew one name only and held to it right or wrong : now they are never satisfied. If a name has been long and generally in use, it is all the more eligible, the writers seem to think, as a victim to the shrine of "priority."* This restlessness is utterly absurd ; but the only cure for it is a good broad rule, that entomologists will henceforth ignore all names but those in use *now*.

The function of "synonymy" now is not to supply a concordance

* I need not refer to instances ; but Dr. Staudinger's miscalculated assault on *Podalirius* has become a joke already.—W. A. L.

for entomologists, by which those using different works may mutually understand each other. That was a benevolent office for which the originators of synonymic-lists deserve our thanks. All that is left for the lists now to do is the miserably different work of displacing names on which all are agreed; or proving the whole world is wrong and only the list-maker right. When it gets to this, it is time that authors of synonymic-lists should be declared *functi, officiiis*. The resurrection-men of entomological literature need as prompt a suppression as their forerunners in another field of enterprise.

The straightforward way of putting it is to say that we want no new names; and I feel sure that in saying this I shall have the hearty support of the English Lepidopterists. If, in the very few cases now produceable where different names are in use in different countries, our names are wrong, we will give them up; but, after that is done, never come to us again with an innovating synonymic-list. We will "draw the line" here.

If only English Lepidopterists will speak and act up to this language, a stop will have been put to a great deal of profitless contention, we shall begin to have books instead of catalogues, and entomologists may take to advancing the science as it is at present, instead of "harking back" to investigate the period of its infancy. We shall get rid of small hero-worship, the stumbling block of the weaklings among entomologists; and at the same time be spared Brown's "new name" for *urtica* and Dümmer's next immortal discovery about *grossulariata*.

I have not nearly exhausted the topic, but will not take up more space at the present time. I hope to return to the subject again, and shall be glad to find, in the meanwhile, that some of your other correspondents feel an interest in it.

Temple: May 12th, 1871.

DESCRIPTION OF A NEW SPECIES OF RUTELIDÆ.

BY CHAS. O. WATERHOUSE.

PLUSIOTIS MARGINATUS, sp. nov.

*Oblongus, ovatus, lævis, nitidus, suprâ viridis, flavo-micans, sub-
tus viridi-æneus; clypeo antice rotundato, crebre punctulato, margine
cupreo; thorace subtiliter punctulato, margine cupreo-micanti;
scutello lævi; elytris parce indistincte punctulatis, leviter bistriatis,
marginibus deflexis, argenteo-æneis, nitidissimis; metasterno (meso-
sterno conjuncto) inter coxas intermedias fortiter producto; labro,
tibiis extus, tarsorumque articulo quinto purpurascens; antennis
fuscis.* ♀.

Long. lin. 12: lat. lin. 6.

The bright apple-green colouring, and the burnished silvery margin to the elytra will at once distinguish this insect from any of the hitherto described species of its genus.

The head is sparingly but distinctly punctured on the crown, thickly punctured on the clypeus; the extreme margin and under-side of this latter, the canthus, the basal joint of the antennæ, and the apex of the mandibles are coppery. The thorax is sparingly and indistinctly punctured, the sides are slightly angular, the extreme lateral margins are thickened and coppery.

The elytra are narrowest at the base, gradually becoming broader to the apical two-thirds and then slightly narrowed, with the apex bluntly rounded. The margins are deflexed, especially at the apex, the deflexed portion bright, silvery æneous; the extreme margin at the base incrassate and slightly reflexed, the reflexed portion coppery. The under side is brassy-green with greyish reflections; the central part of the metasternum with rose-coloured reflections. The prosternal process is broad and slightly concave. The four basal joints of the tarsi are very short.

Habitat, Chiriqui.

In the British Museum, and also in the collection of Mr. H. W. Bates.

British Museum, *May 12th*, 1871.

ADDITIONS TO THE LEPIDOPTERA OF IRELAND.

BY EDWIN BIRCHALL.

The following 30 species have been observed since the publication of my list of the Lepidoptera of Ireland in Vol. iii of this Magazine:—

VANESSA C-ALBUM—Powerscourt.

SYRICHTHUS ALVEOLUS—Galway.

SESIA PHILANTHIFORMIS—Howth.

LITHOSIA COMPLANATA—do.

BOMBYX QUERCUS—Westmeath and Cork.

CABERA ROTUNDARIA—Dublin.

EUPITHECIA PIMPINELLATA—Dublin.

PHIBALAPTERYX LAPIDATA—Donegal.

ACRONYCTA MENYANTHEDIS—do.

NONAGRIA LUTOSA—Westmeath.

APAMEA OPHIOGRAMMA—Westmeath. Included in my original list on the authority of a specimen of unknown origin.

DIANTHÆCIA CÆSIA—Waterford. The Irish specimens closely resemble those from the Isle of Man.

- EPUNDA NIGRA—Donegal.
 CIRRHÆDIA XERAMPHELINA—Down.
 HELIOTHIS MARGINATA—Galway.
 PLUSIA INTERROGATIONIS—Westmeath.
 PHYCIS SUBORNATELLA—Howth.
 SCOPARIA TRUNCICOLELLA—Donegal.
 HALIAS QUERCANA—Galway.
 PERONEA HASTIANA—Westmeath.
 „ MACCANA—Donegal.
 PENTHINA GENTIANANA—Wicklow.
 COCCYX SPLENDIDULANA—Limerick.
 EUPECILIA NANA—Wicklow.
 TINEA LAPELLA—Westmeath.
 ADELA CUPRELLA— do.
 ELACHISTA COLLITELLA—Howth.
 „ CONSORTELLA—Howth.
 BUTALIS FUSCOCUPREA— do.
 TALEPORIA PUBICORNIS— do.

I shall be very much obliged by the communication of any omissions, or of fresh localities for any species.

The foregoing list, short as it is, contains several species which in Great Britain are nearly confined to the northern portion of the island, viz., *A. menyanthedis*, *E. nigra*, *P. interrogationis*, *P. lapidata*, *P. maccana*, indicating the probable direction of a stream of migration into Ireland; and considering the short distance which separates the coasts of Ireland and Scotland (little more than ten miles at one point), it is probable an interchange of species is still in progress, and a careful investigation of the northern shores of Ireland is much to be desired. The recent occurrence of *Phibalapteryx lapidata*, an insect hitherto only known to us as a native of the extreme North of Scotland, is an earnest of the discoveries which I have little doubt would result.

May I also earnestly request Irish collectors to be on the look out for *Argynnis Selene* and *Euphrosyne* and *Erebia Blandina*? I cannot doubt that these three butterflies are natives of Ireland, although yet unobserved; *Blandina* especially, which occurs in boundless profusion on the Argyleshire coast, will surely be found disporting itself on the upland bogs and loch sides of Antrim and Donegal next August.

But I go further.—The collector who has the good fortune to spend the summer amidst the mountains of the north-west of Ireland ought not to rest satisfied with the addition of *Blandina* to the Irish

list; this unexplored district is not at all unlikely to contain butterflies of the genus *Erebia* entirely new to us. Nearly 20 species of this genus are found in the Alps, and six or eight in Scandinavia, whilst in the intermediate British Islands hitherto only two have been observed.

The extremely local character of many of these insects is an excuse for their non-discovery by chance summer visitors; but, now that we have at least *two* entomologists in the north-west of Ireland, better must be done,—or I shall have to name them!

Leeds, April 18th, 1871.

ON *GEOTRUPES VERNALIS*, LINN., AND ITS ALLIES.

BY D. SHARP, M.B.

In his classification of *Geotrupes*, M. Jekel gives, as belonging to his division *Sternotrupes*, six species, viz., 1, *vernalis*, Linn., 2, *alpinus*, Sturm, 3, *pyrenæus*, Charp., 4, *Amedei*, Fairm., 5, *corruscans*, Chev., 6, *purpureus*, Küst.; but he adds a note, saying, “les espèces de ce dernier groupe, souvent contestés par les auteurs, réclament une révision sérieuse!”

I have examined my specimens of this group, and the descriptions of authors as carefully as I am able, and have come to the conclusion that five, and probably the whole six, of the species given by Jekel, must be reduced to two; and I feel so much confidence in this opinion, that I venture to bring it before the entomological public: more particularly does it seem to me that I am justified in doing this, as these two species are generally mixed together in collections, even where some of their varieties are separated as distinct.

These two species are 1, *G. vernalis*, Linn., very variable in colour, size, and sculpture, and liable to assume peculiar forms, especially in mountainous districts; and 2, *G. pyrenæus*, Charp., of which there are also two or three well-marked races. I will briefly allude to the characters by which these two species are distinguished, give a sketch of the variations they present, and conclude with the description of a third species of the division from the Caucasus district.

If a specimen of *G. pyrenæus* be compared with an ordinary individual of *G. vernalis*, it will be seen that *G. pyrenæus* is much more brilliant, smooth, and shining, that it is narrower in proportion to its length, and that its thorax is visibly punctured only at the sides, while that of *G. vernalis* is densely covered with large and small punctures; in like manner the under-surface of the hind body (abdomen) is densely punctured over its whole surface in *vernalis*, and impunctate and shining

in the middle in *pyrenæus*; moreover, if the specimens so compared be males, it will be noticed that the teeth on the under-surface of the anterior tibiæ are eight in number in *vernalis*, and five, or perhaps six, in *pyrenæus*; to these points it should be added that the hinder angles of the thorax are more obtuse and rounded in *vernalis* than in *pyrenæus*. The character derived from the sculpture of the thorax is liable to be diminished to a great extent in some of the varieties of *vernalis*, and the abdominal punctuation also varies somewhat in the different races of *pyrenæus*; nevertheless, the characters given, when once thoroughly seized, separate the two species clearly and decisively.

The variations of *G. vernalis* are very great. In the Alps and Pyrenees occurs a small dark coloured variety, in which the sculpture of the elytra is well marked, and the teeth of the male tibiæ are nine or ten in number; this is the *G. alpinus* of Hagenbach and Erichson. From Carinthia I have a small black variety, with the punctuation of the thorax much diminished. In the Alps there occurs a very brilliant and beautifully coloured green variety, *G. autumnalis*, Ziegl. From Trebizond I have two varieties, one a small, dull, bluish-green individual, with the thorax very densely punctured, and the elytra with raised marks, somewhat resembling blisters; the other a larger, black individual, with its thorax much more finely and sparingly punctured. Besides these varieties, less marked ones are found in various parts of the plains of Europe.

I have not seen a specimen of *G. purpureus*, Küst. (from Turkey); but, from the description, I entertain no doubt that it is a variety of *G. vernalis*. *G. Amedei*, Fairm. (also from Turkey) I have not seen, but I consider it probably another variety of *vernalis*; the synonymy is

G. vernalis, Linn.

lævis, Steph.

v. autumnalis (Ziegl.) Er.

v. alpinus, Hag.

v. obscurus, Muls.

v. violaceus, Muls.

v. varians, Muls.

v. splendens, Muls.

? *v. purpureus*, Küst.

?? *v. Amedei*, Fairm.

This species occurs throughout Europe (even in Sweden and Scotland).

Now, as to the forms of *G. pyrenæus*. The ordinary form varies greatly in its secondary male characters. Generally, there is a tubercle

on the anterior femora of the male ; of this, however, there is sometimes no trace : the posterior femora are furnished behind with a row of irregular teeth, and these, in some males, have entirely disappeared ; the size varies greatly (length 5 to 9 lines), and the colour is black, or black with green or blue reflections.

G. corruscans, Chev., is distinguished from *pyrenæus* by its brilliant purple golden colour, and by the abdominal punctuation being greater ; the colour, however, is toned down in some individuals to a dull brassy tint ; and the abdominal punctuation is scarcely greater than in ordinary *pyrenæus* ; the thorax is sometimes a little shorter than in some individuals of *pyrenæus*, but in others it is quite as long ; this form is confined to the mountains of Spain, and it appears to me to possess no characters by which it can be distinguished as a species from *G. pyrenæus*. I have a series before me from the Guadarrama, and another from Galicia ; these do not quite agree, the Guadarrama individuals being of a more purple and beautiful colour than those from Galicia.

In the "Insecten Deutschlands," Erichson mentions, under the name of *G. splendens*, Zieg., a variety from Italy, which should be referred I think to *G. pyrenæus* ; but I am not sure of this, as Erichson regarded *corruscans* as distinct from *vernalis*, but placed *splendens* as a var. of *vernalis* ; the characters, however, that he gives for *splendens* are much the same as those he gives for *corruscans*. The synonymy is

G. pyrenæus, Charp.

vernalis, Steph.

politus, Muls.

v. corruscans, Chev.

? *v. splendens*, Zieg.

This species appears to be less widely distributed than *vernalis*, and also more local. It occurs in England (but not in Scotland or Sweden), in France, the Pyrenees, and the Asturias, and (as *corruscans*, Chev.) in other parts of Spain.

I have received from M. Deyrolle, under the name of *G. molestus*, Fald., a *Sternotrupes* closely allied to the two species now under consideration, but I think really distinct. The *G. molestus* of Falderman is, however, according to Jekel, an *Anoplotrupes* ; and in this case the insect from M. Deyrolle requires description.

G. (Sternotrupes) caucasicus, nov. spec.

Oblongo-ovalis, suprà niger, nitidus, prothoracis elytrorumque marginibus metallescentibus, subtus viridi-cæruleo-micans ; suprà lævis (capite prothoracisque margine externo exceptis) ; subtus abdomine confertim æqualiter punctato.

Long. 7½ lin., lat. 4 lin.

Mas., tibiis anticis dente apicali emarginato, subtus denticulis 7 instructis; femoribus posticis margine posteriore irregulariter serrato.

Femina latet.

Habitat, Persath (T. Deyrolle).

This species is narrower (the elytra especially being narrower in comparison with the thorax), more elongate, and more parallel than *G. pyrenæus*; it has the sculpture of the upper surface less marked, while that of the hind-body beneath is dense throughout, as in true *vernalis*. With *vernalis*, however, it cannot be confounded on account of its form, its impunctate upper surface, and the rather less rounded posterior angles of its thorax. Though I have seen only one (male) individual, I entertain no doubt of its being a distinct species.

Thornhill, Dumfries: May 4th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 4).

BY H. W. BATES, F.Z.S.

TACHYS DIMINUTUS, n. sp.—*T. platytero* formâ *simillimus*, multo minor; rufo-testaceus, thorace transverso, lateribus antice rotundatis, postice paulo angustato, angulis posticis paululum productis, acutis, margine basali utrinque obliquo, supra linea dorsali postice haud in foveam desinenti, sulco transverso basali profundo; elytris vix convexis, striis 1—2 solum distinctis, leviter impressis, impunctatis, disco puncto unico setigero.

Long. $\frac{3}{4}$ lin. 2 exempl.

Santarem, Amazons.

TACHYS CYCLODERUS, n. sp.—*Vix convexus*, piceus, sericeo-nitens, antenn. articulo basali, partibus oris pedibusque flavo-testaceis; thorace elytris multo angustiori, lateribus usque ad marginem basalem regulariter rotundatis, curvatura solum angulo postico paululum producto interrupta; elytris lævibus, stria suturali impunctata solum distincta, disco puncto unico setigero, apice rufescentibus.

Long. $1\frac{1}{2}$ lin. 2 exempl.

Rio Janeiro.

TACHYS SUBANGULATUS, n. sp.—*T. cylcodero* colore *simillimus*, differt thoracis forma; piceus, nitidus, pedibus croceis, antennis orisque partibus rufo-testaceis; thorace elytris multo angustiori, prope angulos anticos latiori, deinde postice recte paulo angustato, angulis posticis obtusis, haud productis, margine basali pone angulos valde obliquo, sulco basali curvato; elytris striis 1—2 distincte impressis, alteris vix perspicuis, disco puncto unico setigero.

Long. 1 lin. 2 exempl.

Rio Janeiro.

TACHYS MONOSTICTUS, n. sp.—*T. dromiodi* *simillimus*, sed dimidio minor; oblongus, depressus, flavo-testaceus, vertice nigro, elytris apud suturam

et in medio indeterminate infuscatis, læte sericeis; antennis elongatis, articulis 2—6 leviter infuscatis; thorace valde transverso, angulis anticis nullis, rotundatis, postice modice angustato, angulis posticis obtusis, margine pone hos obliquo, supra sulco basali profundo; elytris striis 4 vel 5 distinctis, sed leviter impressis, interstitio 4^{to} disco puncto magno setigero. Long. 1 lin.

The elytra have a silky, iridescent gloss, and the striæ, although broad and distinct, are so shallow, that they are scarcely visible in certain lights.

Sandy margins of pools, R. Tapajos: abundant.

TACHYTA PARALLELA, n. sp.—*Oblonga, depressa, lateribus parallelis, rufo-testacea, vertice elytrisque obscurioribus, his apice macula magna, antennis pedibusque flavo-testaceis; thorace lato, transverso, antice elytris vix angustiori, postice paulo angustato, margine laterali late explanato, reflexo; elytris parallelis, apice obtuse rotundatis, striis 3 vel 4 vix impressis.*

Long. 1 lin. 3 exempl.

Of more depressed form than the European *T. nana*, and distinguished by the flattened lateral borders of the thorax, which are turned upwards, so as to create the appearance of a groove separating them from the disc. The elytra are very obtusely rounded at the apex.

Ega, Upper Amazons: under bark of trees.

TACHYTA MELANIA, n. sp.—*Oblongo-ovata, depressa, nigra vix æneo tincta, antennis tibiis tarsisque piceo-testaceis; thorace quadrato, postice vix angustato, lateribus sub-rectis, angulis omnibus rectis, distinctis, margine laterali explanato-reflexo; elytris striis 3 leviter impressis, 2—3 valde abbreviatis, punctulatis, alteris indistinctis, stria 3^a bipunctata.* Long. 1 lin. 2 exempl.

Resembles the Venezuelan *T. marginicollis*, Schaum, but is without pale margins to the pro-thorax. The flattened margins of the thorax are separated from the disc by a distinct groove.

Rio Janeiro. From the collection of the late Rev. Hamlet Clark.

TACHYTA XANTHURA, n. sp.—*Depressa, æneo-picea, epistomate, partibus oris, antennis, pedibus, thoracis lateribus elytrorumque macula apicali fulvo-testaceis; thorace transversim quadrato, postice vix angustato, angulis posticis rectis, marginibus lateralibus explanatis, intus fortiter sulcatis; elytris striis 4 leviter impressis.*

Long. $\frac{3}{4}$ lin. 1 exempl.

Rio Janeiro. From the collection of the late Rev. Hamlet Clark. The thorax is very similar in form to that of *T. melania*, having the sides nearly straight to the well-marked posterior angles, but the flattened borders are pale fulvo-testaceous, like the legs, antennæ, anterior part of the head, and apex of the elytra.

TACHYTA CRUCIGERA, n. sp.—*Depressa, picea, epistomate, partibus oris, antennis, pedibus, thoracis lateribus et elytris fulvo-testaceis, his*

sutura fasciæque mediana piceis; thorace transversim quadrato, postice vix angustato, angulis posticis rectis, marginibus lateralibus explanatis, intus sulcatis; elytris striis 3 vel 4 leviter impressis.

Long. $\frac{1}{2}$ lin. 2 exempl.

Rio Janeiro. Nearly allied to *T. xanthura*, and, notwithstanding the difference in coloration, possibly only a variety. My two specimens differ greatly in the distinctness of the elytral striæ, and I suspect this character is variable in the whole of the group. The cruciform mark of the elytra is of a reddish-piceous hue, and ill-defined from the pale tawny ground colour.

TACHYTA LIVIDA, n. sp.—*Elongata, angusta, depressa, livido-testacea, nitida, capite marginibusque elytrorum paulo obscurioribus; antennis brevissimis, articulo basali flavo-testaceo, reliquis obscuris; thorace breviter cordato, lateribus antice valde rotundatis, postice fortiter sinuatim angustatis, angulis posticis productis, rectis; elytris elongatis, parallelis, stria suturali solum distincte impressa, disco punctis duobus setigeris, striola recurva lata haud profunde impressa.* *Long. $\frac{1}{2}$ lin. 4 exempl.*

Adelaide, S. Australia. From Mr. J. Odewahn. A curious species, distinguished by its elongate, narrow, parallel form.

OBS. (1) The following species of *Tachys* are omitted or wrongly placed in Gemminger and Harold's catalogue :

Tachys monochrous, Schaum, Berl. Ent. Zeit. 1863, p. 90... Melbourne.

„ *ornatus*, Apetz, de Col. O. et A. Brehm leg., &c.,
1854 Upper Egypt.

Bembidium id., Gemm. et Harold Cat.

OBS. (2) *Tachys æneopiceus*, Bates, E. M. Mag., vol. vii. I should have mentioned, in the description, that this species has the closest possible resemblance to *Pericompsus metallicus*; the absence of a sixth dorsal striæ, which excludes it from *Pericompsus*, furnishing the sole definite distinction.

OPTERUS (group Trechinæ) MACEYI, n. sp.—*O. clivinoide latior, multo minus convexus, fusco-cupreus, subnitidus, mandibulis, palpis basi et apice, antennis basi, pedibus, marginibusque elytrorum piceo-rufis; capite lævi, sulcis frontalibus latis, plicisque duabus utrinque prope oculum; thorace vix convexo, quadrato, postice sinuatim leviter angustato, angulis posticis productis, acutis, basi utrinque bifoveolato et punctato; elytris ellipticis, modice convexis, striis punctatis, leviter impressis, interstitio 8^{to} quadripunctato; tibiis, præsertim anticis, infuscatis.*

Long. 2½—3 lin. 3 ♀.

The general colour varies from pitchy-brown to dullish æneous and violaceous-coppery; the external and deflexed margins of the elytra, and often also the posterior angles and margin of the thorax, being reddish. The form of the thorax is not at all cordate, as in *O. clivinoide*, but is quadrate, a little rounded on the sides anteriorly, and moderately and gradually sinuate-angustate posteriorly.

Specimens of *O. Maceyi* have been submitted to M. Putzeys, who informs me that it is distinct from all other species.

I received large numbers of this insect, through the kindness of Mr. Coleman, from Capt. Macey, who obtained them in the Falkland Islands, together with a few specimens of *Trechus antarcticus*, and a large series of *Antarctica blanda* and *malachitica*.

OPTERUS LEVICOLLIS, n. sp.—*O. clivinoide* latior, multo minus convexo, thorace nequaquam cordato; nigro-subæneus, labro, palpis, antennis, pedibus elytrorumque margine deflexo rufo-piceis; capite sulcis frontalibus vix impressis, brevibus; thorace quadrato, lateribus medio rotundatis, antice et postice (haud sinuatum) leviter angustato, angulis posticis subrectis, supra, lævi basi utrinque bifoveolato, foveis haud distincte punctatis; elytris ellipticis, punctato-striatis, interstitio 3^{to} quadripunctato.

Long. $2\frac{1}{4}$ lin. ♂.

New Zealand, Very closely allied to the Falkland Island species above described; differing chiefly in the thorax being more rounded in the middle, and in the palpi and antennæ being entirely of a reddish colour. The impunctate foveæ of the thorax and distinctly impressed elytral striæ distinguish it from *O. rotundicollis*, White.

The genus *Oopterus* is a purely Antarctic form, and the species, closely allied to each other, are found in New Zealand, the Auckland Islands, Soledad Island, and the Falkland Islands. This distribution, over lands separated by such wide expanses of ocean, is the more remarkable as the species are apterous, as well as purely terrestrial in their habits. The genus belongs to the *Trechini* group. The sutural stria is continued round the apical margin, but recurves only near the lateral margin, where it is separated from the sulcate sub-marginal stria by a raised line.

Kentish Town: May, 1871.

Note on Quedius brevicornis, Thoms., a species new to the British Fauna.—I have recently taken in Studley Park four specimens of a *Quedius*, which Mr. Rye thinks should be referred to *Q. brevicornis*, Thoms., already erroneously recorded as British, the insects on the authority of which it was added to our list being afterwards considered to be *Q. puncticollis*, Th. (for notes on this and allied species

of "red *fulgidus*" see Ent. Ann. 1869, pages 26—29). My specimens were found in and about the nest referred to in the next following notice, and in chips of wood placed near it so as to form traps.—E. A. WATERHOUSE, Fountain's Hall, Ripon, May, 1871.

Note on Coleoptera found in and about a bird's nest.—From an old beech tree, lately blown down in Studley Park, I may, in addition to the *Quedius* above mentioned, enumerate the following insects as being worthy of note; they were found in an old nest (I believe a starling's, but possibly a jackdaw's), and in the rotten wood just surrounding it: *Abræus globosus* and *Quedius scitulus* (several); *Scydmanus rubicundus* (one); *S. exilis* (three or four); *Choleva colonoides* (several); *Trox scaber*, &c.

In the decayed wood of the same tree *Quedius scitulus* was to be had for the the working; I usually obtained one for every twenty minutes' chopping. *Thymalus limbatus* also occurred; *Cerylon histeroideus* was not uncommon, and *Cis bidentatus* abundant.

I also found a few *Euplectus Karstenii*, in most of which the head was much wider, and apparently more coarsely punctured, than is the case with that species usually, as far as my experience goes; and from the chips above mentioned I secured one specimen of *Batriscus venustus* (there was no trace of any ants in the tree).—ID.

Note on a variety of Deleaster dichrous.—Two specimens of this insect, kindly sent to me from Scarborough by Mr. R. Lawson, are to be referred to the var. *adustus* of Bielz (in Küster's "Die Käfer Europa's," vii, 48, 1846), which, as Kraatz notes in Ins. Deutschl., iii, 902, is probably identical with *D. Erichsonii*, Hochhuth (Bull. Mosc., 1851, I. 24, P. 2, 57). To this form also, and not to the type, must be attributed the *Lesteva Leachii* of Curtis, Stephens, and the "Entomologia Edinensis." It differs *primo visu* from the type in having the elytra infuscated at the apex, instead of unicolorous; the antennæ also seem to be a trifle shorter, and the polished elevation of the vertex seems in my insects more limited, and more evidently punctured on the sides. Bielz appears to have fancied a difference in the shape of the scutellum, but Redtenbacher failed to see this in his insect, and it certainly does not appear in the specimens above noted. Kraatz notes it from Glatz, Bonn, and Munich; and it is somewhat strange that none of the many southern English examples seen by me should be of this form; whereas every north-British specimen seems to belong to it. Dr. Sharp some time ago directed my attention to this form from Scotland; and I am induced to notice it now, as it has escaped record, and as it appears also to occur in England.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., May, 1871.

Note on Chrysomela distinguenda.—This beetle occurs in a field close to my house, but does not appear to be widely distributed. One was brought home by my little boy last spring. This year five or six specimens have been found.—R. G. KEELBY, 2, Croham Road, Croydon, 4th May, 1871.

Tettis Schrankii, Fieb., an Orthopteron new to the British lists.—On examining recently a few Orthoptera that I have picked up from time to time during the

last two or three years, I detected several specimens of the above; and, as I have not been able to find (or hear of) any notice of its capture in Britain, I conclude that it has not been previously placed on our lists. In this opinion I am supported by one of the few British entomologists who study *Orthoptera*, Mr. J. C. Dale, of Glanville's Wootton.

Of the four European species of the genus *Tettis*, Charp. (*Acrydium*, F., Stephens), described by D. Fischer, three have been found in Britain,—*T. subulata*, *bipunctata*, and *Schrankii*, the subject of this notice.

For the benefit of collectors, I give from "*Orthoptera Europæa*" the distinctive characters of each species.

1. *T. subulata*, L. (*Acrydium subulatum*, Stephens, Curtis). Vertex sub-angular or sub-truncate in front: the hind process of the pronotum produced *far beyond the apex of the femora of the hind legs*, acuminate and subulate at the extremity; hind margin of the side lobes of the thorax, *two-lobed*; superior keels of the hind femora *incised before the knee*; genital valves of the ♀ scabrous and denticulate. Varies much in colour, being fuscous, pale, or variegated. *T. subulata* is found throughout Europe. I have not seen any Scottish specimens, but have examined an English specimen sent by Mr. Dale.

2. *T. bipunctata*, L. (*Acrydium bipunctatum*, Stephens; *pinnula*, Curtis; *nigricans*, Sowerby). Vertex sub-angular; hind process of the pronotum variable in length, *but never longer than the apex of the hind femora*; side lobes of the thorax deflexed and *bisinate*; superior keel of the hind femora *incised before the knee*; valves of the ♀ denticulate, pilose. Size and colour more variable even than in *T. subulata*; fuscous or variegated, often spotted with black behind the shoulders. Occurs throughout Europe. I have taken specimens in Ross-shire, Inverness-shire, and Kirkcudbrightshire, and have English examples from Mr. Dale.

3. *T. Schrankii*, Fieb. Vertex sub-angular in front; hind process of the pronotum *not longer than the abdomen*, narrowed behind; side lobes of the thorax deflexed, *one-lobed*; superior keel of the hind femora *not incised* before the knee; valves of the ♀ very finely serrulate. The smallest of the European species, and probably often passed over as the larva of *T. bipunctata*. As variable, or more so, than the others, in both size and colour; fuscous, reddish-fuscous or variegated, often with black spots behind the shoulders. Has occurred in various parts of Europe, and is, perhaps, found throughout. Inhabits moors and edges of fields, from early spring till the end of October. I have met with a few specimens in Ross-shire, Inverness-shire and Kirkcudbrightshire, and have also seen one taken by Mr. J. Allen Harker, in the West of Scotland.—F. BUCHANAN WHITE, Perth, April, 1871.

Nyssia lapponaria, Boisduval.—In our last number (vol. vii, p. 282) the occurrence of a specimen of this insect in Perthshire is recorded. The occurrence of its close ally, *N. pomonaria*, Hübner, would never surprise us; indeed, Guenée refers without hesitation an insect figured by Albin to that species, and certainly a comparison of the figure of the larva by Albin, and that of *N. pomonaria* by Hübner, favours the correctness of Guenée's assumption. Unfortunately, Albin gives us no locality for his insect; possibly, if captured anywhere near London (prior to 1720) *the locality has long since been covered with bricks and mortar*. Albin's account of his insect, pl. 97, figs. a, b, c, d, is as follows:

"The caterpillar, *a*, was a kind of *looper*, it was hairy (which is not very common among them), and beautifully marked with several colours. It was found on the hazel the 1st of June, and the 14th of the same month it went into the ground, and changed into a chrysalis, *b*, and at the beginning of April came the moth, *c*, *d*."

Nyssia pomonaria occurs in Germany, central and eastern France, and in Sweden, &c.; is rather scarce; and, according to Guenée, is not easily reared.

Lefebvre, in the *Annales de la Société Ent. de France*, 1835 (not 1833, as printed by Guenée and Staudinger), p. 101, describes *N. pomonaria* under the new name of *N. vertumnaria*; retaining the name *pomonaria* for a closely allied species under the assumption that it was the *pomonaria* of Linné (an error endorsed with perfect faith by Herrich-Schäffer, albeit Linné has no *pomonaria*): to this *pomonaria* of Lefebvre, Boisduval gave in 1840 the name *lapponaria*; and, notwithstanding the characters of the two insects, well pointed out by Lefebvre, it is still a question with some more recent writers whether *lapponaria* is specifically distinct from *pomonaria*, or whether it is only a northern and Alpine form of that species.

Lapponaria should be distinguished from *pomonaria* by its smaller size, by the cilia of the anterior wings being uniform in colour and not checkered, by the abdomen bearing above a central orange streak, and by the legs being entirely black, with no white annulations.—Eds.

Occurrence of Danais Archippus in Queensland.—The sudden appearance this season, and for the first time, of this fine insect in Queensland, has caused much speculation among our local entomologists. What seems most extraordinary, is the fact of its appearance in such large numbers, and its being so widely distributed. I cannot ascertain that a single specimen was observed last season, or ever before in the colony. As many as 30, at least, have been taken, to my knowledge, in Brisbane; and I have lately seen a specimen sent from Rockingham Bay, about 1,500 miles north of Brisbane. The insect haunts localities infested by *Asclepias curassavica* (an introduced plant, but now growing wild in all parts of the bush), upon which the larva evidently feeds.—W. H. MISKIN, Brisbane, 21st February, 1871.

[*Danais Archippus* is an American species, as is also *Asclepias curassavica*. We have made enquiries concerning the sudden appearance of this butterfly in Australia. Mr. A. G. Butler informs us that he has seen examples from one of the South Sea Islands (*vide Annals and Mag. Nat. Hist.*, May, 1870); and that Mr. Godman found it in the Azores. Mr. Bentham advises us that the *Asclepias* is completely naturalized in many parts of Asia and Africa as well as in Australia. The occurrence in Queensland tends to the belief that the insect may have gradually made its way across the Pacific from Western America; but its sudden appearance in such numbers has yet to be accounted for.—Eds.]

Tæniocampa leucographa, &c., near York.—During the last week I have taken a fine series each of *T. leucographa* and *T. opima*, at fallows, in this district; the former is very rarely taken with us. The night of March 25th was very mild; the glowworms were shining quite commonly. I took that evening upwards of 100 specimens of *Pachnobia piniperda* amongst other species at fallows.—JOHN W. CARRINGTON, 31, Holgate Road, York, April 17th, 1871.

Abundance of larvæ at Sheerness.—The hedges in this neighbourhood are infested with the larvæ of *Porthesia chrysorrhæa*. At the present time they are half-grown, and the amount of mischief already occasioned is most apparent; when they are full-fed, there will be hardly a leaf left, as they seem to attack almost every plant, although giving a preference to sloe and white-thorn. Besides this species, the larvæ of *Bombyx neustria* are just hatching, and promise to be nearly as plentiful. In addition to the trees preyed upon by *chrysorrhæa*, I observe these larvæ exhibit a partiality for standard roses and every variety of fruit tree. On one small rose bush, I yesterday counted no less than seven broods; these were only a few days old, and each brood might easily be picked off and destroyed; but I doubt if the gardeners about here are wide enough awake to look to this. The young larvæ of *Leucoma salicis* are now appearing on the poplars in the Dockyard in vast numbers. It seems we are going to have a favourable year for larvæ of all kinds. It is strange that last summer I noticed but few of *chrysorrhæa*, and only one or two perfect insects; but *neustria* was abundant enough.—GERVASE F. MATHEW, B.N., Royal Naval Barracks, Sheerness, May 17th, 1871.

Early appearance of Acronycta aceris.—Notwithstanding the cold easterly winds we have had for the past fortnight, I observed this species on the 11th inst., a day earlier than last year; and, from its rubbed appearance, I imagine it had been out several days. On the 15th, and again on the 16th, what I believe to be the same specimen was sitting on a block of granite within a few yards of the place where I observed it on the 11th. I conclude it is an unimpregnated female, or that the cold nights prevented its moving. I have not been to see whether it is there to-day.—ID.

Natural history of Phibalapteryx lignata.—As long ago as September 5th, 1862, I had eggs of this species from Mr. Fenn; but, through ignorance of any suitable food-plant, could do nothing with the larvæ. Again, on July 8th, 1863, I had eggs from Mr. Birks, and managed to keep a larva or two alive for some time on *Galium mollugo* and *Clematis flammula*, but could not bring them to full growth. During the past season, however, I have been much more successful, thanks to Messrs. Barrett, Birks, and Carrington, to whom I am indebted for supplies of eggs, and information concerning the imago.

The natural food-plant is probably *Galium palustre*, which I am told grows in the habitat of the moth, for I have found the larvæ thrive well on *G. saxatile*, although, as shewn above, *mollugo* did not suit them; but this is a point of taste in which this species is not singular, for I have known some three or four others, which would change about from *Galium verum* to *saxatile*, and *vice versâ*, but would not go so far as to include *mollugo* in their bill of fare.

It appears certain that there are two flights of the moth; the first consisting of larger and finer individuals, and lasting from the end of May to some time in July; and the second of more stunted growth, on the wing some time about the end of August.

This second brood may be only partial, and may depend more or less on the character of the summer; but, whatever be the extent of it, it must be found constantly in different localities. The date given above for eggs, September 5th, points to a second brood, and Mr. Carrington, from the experience of former years, made sure of getting eggs a second time last season, and sent me some on August 29th.

The dates of the transformations observed by me last year are as follows :— Mr. Birks sent me eggs, which arrived in the shape of young larvæ, on July 18th ; they fed up very rapidly, and began to spin on August 5th ; and on the 20th I bred several moths ; these I could not get to pair, so Mr. Carrington, as mentioned above, forwarded eggs on August 29th ; the larvæ hatched on September 3rd, but, owing to my inability to supply them with fresh food in sufficient quantity (for *Galium saxatile* is not plentiful here), dwindled away, and died ; and I thus lost the opportunity of deciding whether hybernation takes place in the pupal or in the larval stage.

The egg is bluntly oval in outline, flattened, and with a shallow depression on the upper surface, pitted very shallowly all over ; in colour pale yellowish, turning leaden at last. The newly-hatched larva is noticeably slender, dusky-olive in colour, with brownish head.

For a time it remains of a dusky, pale green, but before long dons a more decided dress, dark green above, and pale green below. When about half-grown, the ground-colour is dull greyish-green, with a dull, dark green (almost blackish) fine dorsal line, a fine sub-dorsal line, and two stouter brownish-green lines just above the spiracles ; belly of the ground colour, with central and two side-lines running through it, faint, except at the folds, where they show as strong purplish-brown dashes ; at this stage it is altogether duller looking than when full-grown.

When full-grown, the length barely three-quarters of an inch, the figure cylindrical, tapering slightly and gradually from the tenth segment to the head, which is as wide as the second segment ; the skin smooth.

The ground colour a yellowish-green, that on the hinder segments being of a more tender tint than the rest ; the back, from segments 4 to 9, both inclusive, more or less suffused with dull brownish-pink ; the head green with brownish bristles ; the second segment full green, the third dull green, the dorsal line of a deeper tint of whatever colour it passes through, pink through the pink, and greenish after the ninth segment, and thickening almost into a narrow diamond as it passes each fold ; the sub-dorsal line is pale, often edged above and below with a fine dark thread, the upper edging having a blackish dash at the beginning of each segment : the rest of the side is divided by a faint, pale line into two halves, of which the upper is of the same colour as the back, and the lower decidedly darker, and on its lower edge, at the beginning of each segment, is a black or blackish dash ; the spiracles are reddish, and beneath them runs a pale reddish stripe ; the belly is of the ground colour.

In some specimens the pink suffusion of the back is confined to the five folds between segments 4 to 9, and is softer in tint, and leaves the centre of these segments of a tender green ; the lines and dashes as above, but fainter. In others the pink may be called purplish ; all have the ventral prolegs tinged with purplish-brown, and with a dark dash down them. In some, again, a darker green takes the place of the pink dorsal suffusion. But in any case the full-grown larva has a soft delicate look.

Many of my larvæ spun among their food, others just under the soil, making a weak cocoon with a few silken threads. The pupa is short and cylindrical in figure, the eyes prominent, the abdomen short, the tail covered with the cast larva-skin ; the skin polished, the back dark brown, the wing cases, antennæ, and belly of abdomen bronzy-green.—J. HELLINS, Exeter, 21st February, 1871.

Natural History of Dasydia obfuscata.—The eggs of this species were kindly forwarded to Mr. Buckler by Dr. F. Buchanan White in July, 1869. Mr. Buckler took notes of the egg-state, and of the young larvæ till hybernation commenced, and from that period handed them over to me.

The larvæ were hatched during August, and the early part of September, fed readily upon *Calluna vulgaris*, and just as readily on *Polygonum aviculare*, attained the length of rather more than a quarter inch before hybernation, near the end of October; began feeding again towards the end of March, 1870; moulted sometime during the first fortnight of April, and again in May, and by the end of June the most advanced were full fed, but they did not all keep pace together.

The moths appeared from August 17th to September 5th.

The egg is shortish-oval in outline, flattened; the shell ribbed with lines of fine beads; the colour at first yellowish-white, changing in a few days to salmon, and again, shortly before hatching, to bluish-grey, the ribs, however, showing white to the last. Judging from those sent by Dr. White, the eggs appear to be laid in little groups of two or three or even more together, and to be set up on end, on the sprays of heather.

On hatching, the young larva makes its escape from the top of the egg-shell, and even at this early age has—for a *Geometer*—a stout figure; its colour is pale leaden-grey, with a paler sub-dorsal line, which is bordered below with a darker grey stripe; the head blackish.

Just before hybernation, when of the length of rather more than a quarter inch, the larva is very rugose; its colour is now a dingy blackish-brown on the back and sides, with a broad, sub-spiracular stripe of reddish or violet-grey, intersected by a blackish line; the head blackish, with a grey spot on the crown of each lobe; an indistinct, dark, dorsal stripe, edged with fine grey lines; the tubercular raised warts grey, the dorsal pair on the twelfth segment being more prominently raised than any of the others.

As the larva grows it becomes lighter in colour, and when full-fed may be described as follows:—length not quite an inch, figure very stout and stiff, cylindrical in the middle, slightly flattened at the extremities; the spiracular region forming a puckered ledge; head smaller than 2nd segment, and tucked in; legs short.

The ground colour grey, in some specimens becoming gradually paler behind; on the front segments a fine, double dorsal line, enclosing a whitish-grey thread, but afterwards this double line appears only as a small, elongated, spear-head in the middle of each segment; the sub-dorsal line is a fine waved pale thread, edged with black, and bearing thick, dark dashes at the beginning and end of the segments; the tubercular warts are whitish with dark rings, the dorsal pair on twelfth are placed close together, and, being more developed than the rest, stand up as obtuse points; the row of warts on 13th segment above the anal flap are very small, and black in colour; the spiracles are pale brown ringed with black, and are placed in a stripe of dark grey, with darker dashes at the folds, and some fine dark streaks, wavy and sloping upwards; this is followed by a line of whitish-grey, which melts into the grey or reddish-grey of the belly, the centre of which is buff, and bears a row of pairs of brown dashes down the middle, with five sets of curious, curved, pairs of streaks on either side at the folds between segments 5—10.

The stout, stiff figure of this larva, its short legs, and its sluggish habits, are all very congruous, but, as in former cases, I leave others to decide whether figure forms habits, or habits form figure.

The larva spins under the surface of the soil, but, owing to the death of most of my stock just when they had disappeared for this purpose, I am not able to say anything of the pupa or cocoon.

The "concave" outline of the costa of the fore-wings (v. Stainton's Manual, vol ii, p. 30), is very noticeable in the freshly-bred moths, as they rest with expanded wings; in the male the concavity is greater almost than that shown by *Hypona proboscidalis*, though, of course, the tip of the wing is rounded, and not at all falcate.—*Id.*, May 11th, 1871.

Description of the larva of Eremobia ochroleuca.—On the 22nd June, 1870, in striking at a specimen of *Lycæna Alsus* in an old chalk-pit, I took in my net by chance a very delicate looking, active, *noctua* larva, which was quite a stranger to me: believing I had obtained it from *Anthyllis vulneraria*, I put some of this plant with the larva into a box; but, on looking at it late in the evening, I saw it had not eaten any of the vetch, and seemed eager to escape.

As I could remember nothing but grass besides the *Anthyllis* growing in the spot where it was taken, I went out in the twilight, and gathered a little of the first species of grass that came to hand, without noticing what it was.

Next morning I was very pleased to see that the larva had partaken freely of the grass; and having by me at this time, potted, a growing tuft of *Nardus stricta*—a species I had noted on the dry, grassy slopes where I had been the day before, I too hastily assumed this to be the proper food of my captive, and placed it thereon, securing it with a glass cylinder. As my attention at this time was fully taken up by many other larvæ, I forgot to look at my unknown for some days; and when I saw it again it was not the least grown, nor did it look well. This made me resort to other grasses, but without effect; and I had the mortification of seeing it, day by day, become smaller and feebler, till on the 2nd. July it died. But, before the breath was quite out of its shrunken body, my regrets were banished (thanks to Mr. W. H. Harwood, of Colchester), who sent me on July 1st a larva precisely similar in form and colour, but much larger in size; and, what was still better, feeding away hopefully on its proper food—the seeds in a panicle of cock's-foot grass—*Dactylis glomeratus*.

In order to make quite sure of this being its proper food, having gathered fresh panicles of this grass, as well as of two or three other kinds, and put them in with the larva; but I saw that it roamed over the other kinds till it found the seeds of the cock's-foot grass, and then attacked them ravenously, thus perfectly satisfying every doubt. On the 3rd of July it retired to earth; and on the 30th the perfect insect came forth.

This full-grown larva varied in no respect from that which I had myself taken, save in size, for it was twice as large. It was one inch-and-a-half in length, cylindrical, of moderate and uniform stoutness throughout, including the head, the lobes of which were rounded and full; the legs and prolegs all well developed.

Its ground colour a bright but very pale opaque whitish-green; the very broad dorsal stripe whitish, the sub-dorsal stripe similar, but a trifle less in breadth; between this and the spiracles the ground colour became a little deeper; was bor-

dered along the spiracles by a narrow stripe of full-deep green; the sub-spiracular inflated stripe whitish; the belly and legs of the ground colour, a trifle darker than the back. The head was also of the pale ground colour, with a blackish streak across the mouth, and was more polished than the surface of the body, though that was rather glossy; the folds of the segmental divisions appeared white; the spiracles were black, as well as all the tubercular dots, which were plainly visible in their usual situations, those on the back smaller than the others, and every one of them furnished with a fine whitish hair; the anterior legs also spotted with black.—WM. BUCKLER, Emsworth, Nov. 25th, 1870.

Description of the larva of Acidalia trigeminata.—I am very much indebted for young larvæ of this species to the kindness of Mr. J. R. Wellman, who captured the parent moth on the 18th June, 1870. The eggs, Mr. Wellman informs me, were, as well as he can remember, of a pale pinkish colour, and much like those of *rusticata*; they were laid loose in a box, and hatched in about ten days.

The young larvæ were supplied at first with a variety of food, including maple, birch, and knot-grass. In their infancy they appeared to feed on the two first-named; but, when nearly half-grown, they fed entirely on *Polygonum aviculare*; and on this plant I had the pleasure to make their acquaintance on the 28th of June, and continued to feed them with the same up to their pupation, which occurred July 22nd to 24th. One moth, a ♂, appeared on the 14th of August, the others remaining over the autumn and winter. Mr. Wellman, more fortunate, bred upwards of a dozen specimens, between the 8rd and 16th August.

The full-grown larva is about three-quarters of an inch in length, and, although its shape is really more cylindrical than flattened, the puffed spiracular region gives the appearance of a rather flattened form: its breadth is greatest at the ninth segment, from which it tapers, by degrees, both behind to the anal tip, and in front towards the head, which is the smallest segment; it is very rugose, each segment being sub-divided into twelve portions by deep wrinkles; the segmental divisions deeply cut, and much less in diameter than the segments themselves.

Its colour is a dingy deep brown, relieved along the spiracular ridge by an almost continuous streak of dirty pale ochreous, interrupted at the segmental divisions. On the back, as far as the beginning of the tenth segment, is a very faint, pale dorsal line, chiefly visible before and behind each segmental division, where it is palest, and set off by being bordered by thick black strokes; from these, two blackish streaks diverge obliquely towards the sub-dorsal region, forming a kind of Λ mark pointing forwards on the anterior of the segment, the middle part of which is much suffused with dark brown; the sub-dorsal line is also blackish but not continuous, being interrupted twice on each segment; on the tenth segment there is a central, somewhat star-shaped, whitish spot, and the remaining posterior segments are brown, without any definite markings. The ventral surface is dark brown, and contrasts strongly with the pale spiracular ridge; the head is shining brown. The larva of this species is further distinguished from those of its congeners, by having, from each of its wart-like tubercles, a rather long, dirty, ochreous bristle, curved forwards on all the segments as far as the tenth, but curved backwards on the other three; these bristles have the extremity as thick as the base, and greatly resemble those on some species of *Caradrina*.

It is a very timid larva, contracting itself at the least alarm, and remaining a very long time afterwards without movement. Its usual position in repose is a close coil, with its head twisted round on one side, over the back of the tenth segment.—ID., Nov. 26th, 1870.

BRITISH HEMIPTERA. ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

Section 2.—CORIINA.

Family 2.—CORIZIDÆ.

Genus 2.—CORIZUS, Fallén.

CORIZUS ABUTILON.

Cimex Abutilon, Rossi, F. E., ii, 242, 1325 (1790).*Corizus Abutilon*, Sign., Ann. Soc. Ent. France, 3^{me} série, vol. vii, 77, 2 (1859), Stål, Oefvers. K. Vet. Ak., 208, 2 (1862).*Corizus substriatus*, Burm., Handb. ii, 306, 2 (1835).*Rhopalus Abutilon*, Fieb., Eur. Hem., 233, 2 (1861).

Above ochreous, shaded with fuscous or black punctures. *Antennæ*, first joint ochreous, above with black spots, beneath with a black line, fourth joint brown. *Scutellum*, apex rounded. *Elytra*, transparent, anterior margin posteriorly brownish and opaque. *Abdomen* above, black with an irregular A-shaped mark on the basal segments, and the whole of the sixth, except a vitta in the middle, stramineous: *connexivum* stramineous, with a black spot on each segment. *Under-side* pale ochreous, pilose.

Head: *crown* quadrate, coarsely punctured, in the middle, longitudinally, fuscous; behind the middle of each eye a short, black line extending to the base of the head: *face* with fine, short, projecting hairs, middle lobe punctured, side lobes scarcely punctured; antenniferous processes broad, exteriorly without punctures, angles sub-acute. *Antennæ*: first joint ochreous, above with a few irregular, black spots, beneath with a longitudinal black line; second and third ochreous, with a brownish tint, unspotted, the second a trifle longer than the third, the third with a very narrow, black ring at the base; fourth, pale brown, posteriorly ochreous, the extreme base enlarged and black. *Eyes* brown. *Ocelli* pale, with a brown spot.

Thorax: *pronotum* strongly punctured, except on the sides; on the disc the punctures fuscous, in irregular, longitudinal series, forming indistinct dark shades; the anterior ridge and the slight raised line down the middle smooth and pale; close behind the former near each side, a narrow, eye-shaped space defined by a surrounding black line. *Scutellum*, except on the middle line and sides, obscured by black punctures; the apex broadly rounded, the margin raised, pale, and smooth. *Elytra* longer than the abdomen, transparent, shining; *clavus* pustulate at the base, the inner margin gradually embrowned, till at the apex the colour ends in a brown dot; *corium*, nerves prominent, the intervals lightly crenate, anterior margin posteriorly brownish, opaque, within the margin throughout a row of black punctures. *Sternum*: *sides of metasternum* not projecting. *Legs* pale ochreous; *thighs* clear at the base, thence,

on the upper-side, with small, black spots in rows, confluent towards the apex; *tibiae* with a few small, black spots, towards the apex on the inner side, in a row; *tarsi*, first joint at the apex, especially on the inner side, second at the extreme apex, third, on the posterior half, fuscous-black; *claws* black.

Abdomen: above black; in the middle of the basal segments an irregular Λ -formed mark, the posterior margin of the fifth segment, and the whole of the sixth (except a black, longitudinal vitta in the middle), stramineous; *connexivum* stramineous, a black spot at the posterior outer angle of each segment. *Under-side* pale ochreous, a small black spot, close to the stigmata, on each of the last three segments. Length, $3\frac{1}{2}$ lines.

A single ♀ taken by Mr. Champion at Deal, last July (see vol. vii, p. 208).

Fieber (l.c.) and Stål (l.c.) quote *Coreus magnicornis*, Fab., as synonymous with *Cimex Abutilon*, Rossi. Stål, however, in his latest work (*Hemiptera Fabriciana*, i, p. 69, 3, 1868), quotes instead *Coreus crassicornis* Fab., leaving it to be inferred that *C. crassicornis*, Lin., is a different species. Fieber, however, reckons *C. crassicornis*, Lin., and Fab. as the same, and a distinct species from *C. Abutilon*. *Coreus capitatus*, Panz., F. G., 92, 19, cited by Fieber and Stål, does not appear to us to represent our species; and their references to *Corizus magnicornis*, Bohem., and *Rhopalus magnicornis*, Sahlb., seem to want confirmation.

Section 5.—LYGÆINA.

Family 1.—RHYPAROCHROMIDÆ.

Genus SCOLOPOSTETHUS, Fieb.

SCOLOPOSTETHUS CRASSICORNIS, n. sp.

Ferruginous. *Head* and anterior two-thirds of *pronotum* fuscous or piceous-black; *antennæ* long, thick, black, first joint as long as the second, testaceous; *elytra* with a black band across the middle of the corium, extending on to the clavus, interrupted on the middle of the corium and by the claval suture; posterior margin of the corium black; *legs* testaceous.

Ferruginous. *Head* black, closely and finely yet roughly punctured, central lobe and antenniferous tubercles dark ferruginous; *antennæ* long, thick, black, delicately pilose, first joint very long, testaceous, second not longer, third nearly as long as the first, fourth shorter than the third, short fusiform, apex ferruginous; *rostrum* testaceous.

Thorax: *pronotum* narrow, sub-trapeziform, or rather sub-campanulate, the anterior angles rounded, the hinder margin not very much longer than the anterior, and the sides somewhat constricted in the middle; their ferruginous margin distinctly raised and reflexed throughout; disc closely, finely, yet roughly

punctured; anterior two-thirds, convex, black, anteriorly ferruginous, on the posterior part of this portion a large, central, sub-quadrated fovea: posterior third depressed, obscure ferruginous, the posterior margin broadly black; *scutellum* dark ferruginous, the base almost black, closely punctured; *elytra* ferruginous; *clavus* closely punctured in rows, towards the apex, crossed by a black band; *corium* bright ferruginous, pale at the base, and, except a row of punctures along the claval suture, quite smooth; across the middle a broad, black band, interrupted in the centre, extends in a line with the band on the *clavus*, from which it is disconnected by the claval suture; posterior margin with a distinct, black line, which also is continued from the apex considerably up the anterior margin; *membrane* very short, fuscous, with a yellowish streak at the base, along the exterior half of the posterior margin of the *corium*; nerves black; *legs* testaceous; *thighs* all black at the apex, first pair beneath with the margins of the channel finely serrate, and one posterior and one anterior and smaller spine. Length $1\frac{1}{4}$ line.

A very well-marked species, differing from the generic type in the length of the first joint of the antennæ, and, a proportionate shortening of the second joint. As specific characteristics, the thickness of the antennæ and the yellow of the *first* joint only are very noticeable.

A single ♂, in Dr. Power's collection, taken by Mr. Moncreaff, at Southsea, in May, 1870.

Genus DRYMUS, Fieb.

DRYMUS LATUS, n. sp.

Long-oval, black, naked, slightly shining; *head* narrow, pointed; *antennæ* long, black; *pronotum* long, campanulate, much widened posteriorly, sides sinuate throughout, disc anteriorly delicately, posteriorly rugosely, punctured; *scutellum* large, the central depression large; *elytra* fusco-piceous, punctured, the anterior margin pale piceous; *membrane* with two spots at the base, and one on each nerve, yellowish; *legs* piceous.

Head narrow, pointed; *antennæ* long, slender, black, or pitchy-black on the first joint, with fine, short, projecting hairs, the base of each joint very slender petiolate; *eyes* small, slightly removed from the pronotum; *rostrum* piceous.

Thorax: *pronotum* long, campanulate, much widened posteriorly, anterior margin much longer than the width of the head, anterior angles much rounded, sides sinuate throughout, the reflexed margin piceous; posterior margin widely, not deeply, concave; the callus at the posterior angles small, smooth; disc convex, anterior two-thirds black, very finely punctured (except behind the head a patch of coarse punctures), posterior third rugose-punctate, on its anterior portion, and especially in the middle, transversely depressed, posteriorly transversely convex, towards the posterior margin with a piceous tinge. *Scutellum* large, flattened, with distinct, round, irregularly-placed punctures, the central depression large. *Elytra* somewhat depressed, wide, scarcely so long as the

abdomen, fusco-piceous; *clavus* with four rows of distinct, black punctures; *corium* exterior to the outer nerve, pale piceous, disc with fine, black punctures in irregular rows; *membrane* with an undefined spot at the base of the two inner nerves, a long one exterior to the base of the outer nerve, and a long one on each of the four nerves posteriorly, not extending to the extremity, all yellowish. *Legs* slender, piceous, with fine projecting hairs; *thighs* pale at the apex, first pair beneath, beyond the middle, with one small spine on the inner edge.

Abdomen black, lustrous.

Length 2½ lines.

This very distinct species, which we cannot find to have been described, fits very well to the characters given by Fieber to his genus *Drymus*, the antennæ and the pronotum, however, are proportionally longer than in either of the other species.

One example, ♀, was taken by Mr. Champion last August, in moss, in a wood near Hurst, Sussex.

Genus LASIOSOMUS, Fieb.

Body pilose, long-ovate.

Head pentagonal, middle lobe prominent, side lobes narrow, curved inwards; *eyes* globose, projecting beyond the anterior angle of the pronotum; *antennæ* hairy, first joint long, slightly thickened to the apex, projecting about one-third beyond the apex of the head, first, third, and fourth joints in length sub-equal, second rather longer, fourth scarcely thicker than third, long-fusiform; *rostrum* reaching across the metasternum, first joint rather longer than the head. *Pronotum* trapeziform, sides sinuate, across the middle depressed, anterior margin slightly and obtusely carinate. *Elytra*: *membrane* with four fine nerves, the inner two joining posteriorly, and forming a long, narrow cell; *legs* moderate, anterior *thighs* scarcely incrassated, unarmed.

Fieber places this genus between *Pionosomus* and *Acompus*.

Species 1.—LASIOSOMUS ENERVIS.

Pachymerus enervis, H.-Schf., Wanz., vi, 57, t. 199, fig. 618 (1842).

Lasiosomus enervis, Fieb., Eur. Hem., 185, 94 (1861).

Black, shining, clothed with pale hairs; *antennæ*, except fourth joint, *elytra*, and *legs* piceous-yellow.

Head unpunctured, apex piceous; *antennæ* piceous-yellow, fourth joint black, all clothed with very fine, short, projecting hairs.

Thorax: *pronotum* with large, irregular punctures, and intervening smooth spaces, anterior and posterior margins, and also undefined shades in the posterior

portion of the disc, piceous; *scutellum* slightly convex, finely punctured; *elytra* depressed on the claval suture, exteriorly convex, piceous-yellow, posteriorly with a darker transverse shade; *clavus* and each side of the claval suture with rows of large, distant punctures, discoidal nerve of the *corium* also with a row of similar punctures on its outer side, and a few others scattered on the disc posteriorly; *membrane* whitish, transparent, the nerves concolorous; *sternum* with large, deep punctures, and long, projecting hairs; *legs* entirely piceous-yellow, clothed with short hairs.

Abdomen black, hairy, shining.

Length 2 lines.

A single specimen was taken many years ago by Mr. Wollaston, but there is no record of the locality.

The species, the only one of the genus, has much *primâ facie* resemblance to *Stygnocoris sabulosus*, but it differs *inter alia* by its greater size, and stouter, more uniform antennæ. It is found but rarely in Switzerland, Austria, and Norway (*Schiödte*).

FAMILY 2.—PHYGADICIDÆ.

GENUS 2.—NYSIUS, Dall.

NYSIUS MACULATUS.

Nysius maculatus, Fieb., Eur. Hem., 168, 2 (1861).

Narrow, black, shining. *Head*: middle lobe above, side lobes inwardly, and a spot on the posterior margin, ochreous. *Antennæ* piceous. *Rostrum* black. *Pronotum* with three small spots in front, one on each side, one on the posterior margin, and on each posterior angle, ochreous. *Scutellum* black. *Elytra* pale ochreous; *clavus* and *corium* posteriorly brown-spotted; nerves and posterior margin of the latter with long, fuscous-black spots; *membrane* pale, infuscated between the pale nerves. *Sternum* with pale, coxal spots. *Thighs* black, yellowish at the apex; *tibiæ* fuscous-brown.

Head finely punctured, middle lobe on the surface, side-lobes inwardly, and a small spot on the middle of the posterior margin, ochreous. *Antennæ* piceous. *Eyes* brown. *Rostrum* black.

Thorax: pronotum with only a slight indication of a middle keel; the anterior third of the disc finely, the other two-thirds deeply, distinctly, and more strongly punctured; on the anterior margin, in the middle, a small spot, and behind each eye a still smaller one, on each side-margin one rather elongate, on the posterior margin one in the middle, and one on each prominent posterior angle, all ochreous. *Scutellum* finely punctured, except on the slight, smooth middle keel. *Elytra* pale, dingy ochreous: *clavus* posteriorly with indistinct, cloudy, fuscous spots; claval suture with a thin, black line; *corium* inwardly and posteriorly spotted like the *clavus*; anterior margin with a narrow, black line; posterior margin fuscous-black, interrupted by the ends of the two pale

nerves; nerves yellowish, each with three elongate, fuscous-black spots: *membrane* dingy whitish, nerves straight and pale, the intervals infuscated. *Sternum*: the posterior margin of the segments, a spot next the coxæ, and the odoriferous stigmata, pale ochreous or stramineous. *Legs*: *thighs* black, first pair on the anterior half more or less yellowish, with black dots in rows; second and third pairs yellowish at apex; *tibiæ* fuscous-brown, darker at apex, narrowly black at base; *tarsi* concolorous with the *tibiæ*, extremity of the joints, and claws, darker.

Abdomen: the margin of the posterior segments pale ochreous. Length $1\frac{1}{2}$ line, ♂.

Described from a single example taken many years ago, locality not recorded (*Douglas*). This species comes next to *N. thymi*, Wolff, from which it is at once seen to differ in being smaller, narrower, and black, with black legs. The specimen varies somewhat from the description in the Eur. Hem., but it has been seen by Dr. Fieber, who has determined it to be his *N. maculatus*.

Section 11.—OCULATINA.

Family.—SALDIDÆ.

Genus.—SALDA, *Fab.*

SALDA ARENICOLA.

Salda arenicola, Scholtz, Arb. u. Veränd., 6, 5 (1846): Fieb., Wien.

Ent. Monats., iii, 236, 9 (1859); Europ. Hem., 146, 9 (1861).

Long-oval, black, slightly shining, with golden, silky pubescence; *antennæ*, first joint at the sides, second at the apex, fulvous; *cuneus* with a sub-apical whitish spot; *corium* with a large, whitish, transverse, dentate blotch before the middle, extending from the anterior margin to the clavus, and eight or nine very small, posterior, whitish spots; *tibiæ* with a distinct, yellow, sub-apical ring.

Head: *antennæ* slender, black, with fine, short, projecting hairs, second joint twice as long as the first, third rather longer than the first, fourth rather shorter than the third; the first on both sides, the second at the apex on the upper-side, fulvous; *eyes* black with a fulvous line at the base; *rostrum* black, base externally, and the *labrum* fulvous.

Thorax: *pronotum* short, delicately punctured, sides narrowly flattened, margins slightly curved outwards, the edge scarcely reflexed; posterior margin deeply excavate over the base of the scutellum, produced squarely over the base of the corium; disc anteriorly with a moderate callosity, in which is one transverse fovea. *Scutellum* finely crenate-punctate or shagreened, before the middle a large, deep, transverse fovea. *Elytra*: *clavus* and *corium* finely, obtusely punctate, or shagreened; *clavus* with a white, sub-apical spot; *corium* with a large, irregular, white blotch before the middle, extending from the anterior margin of the clavus, its upper edge straight, the lower one dentate

through being produced posteriorly between the first and second nerves, on this middle portion is a black dot; below the blotch eight or nine very small, whitish spots, of which two, rather larger, lie close together near the anterior margin towards the apex, and two close to the posterior margin (some of these dots are sometimes obsolete); *membrane*, base and nerves black, between the nerves, posteriorly, yellowish-white, in each cell a more or less elongate and broad fuscous-black spot, generally also a small, white spot at the base of the inner three cells; exterior to the cells fuscous, on the outer margin black, with a large, triangular spot below the apex of the corium, and another smaller and round on the posterior margin. *Legs*: *thighs* yellow, posterior margin black, above and beneath a chain of black or brown spots, not extending to the apex; *tibiæ*, all with a broad, yellow ring before the black apex, first pair yellow, with a black line above, second and third pairs black, with a fine, scarcely perceptible, exterior, yellow line, third pair with fine, distant spines; *tarsi*, black, second joint yellow, third sometimes yellow at the base.

Length $1\frac{1}{2}$ line.

In form nearest to *S. pallipes*, Fab., Fieb., but more elongate-oval. Distinguished from all its congeners by the peculiar, large, light blotch on the corium, the blackness of the second and third pairs of *tibiæ*, and the yellow annulus on all of them.

Differs a little as to the maculation of the elytra from Fieber's description, and also in size, which is given as two lines long, otherwise identical.

A single example in Dr. Power's collection, captured last spring at Hayling Island by Mr. H. Moncreaff; others taken in August, near Bournemouth, by Mr. E. Saunders. (See vol. vii, p. 157).

[To be continued.]

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 5).

BY H. W. BATES, F.Z.S.

Sub-fam. LACHNOPHORINÆ.

This group was instituted by Lacordaire in the first volume of his "Genera," but with inaccuracies which soon led to attempts to reform it. One of these inaccuracies was the incorporation of *Callistus* with the other (chiefly tropical) genera, a combination which this great Entomologist had adopted from Baron Chaudoir. This was corrected by Schaum, who also proposed the further improvement of removing the group from the vicinity of the *Bembidiinæ*, with which Lacordaire had placed it in close combination, and associating it with the *Odacanthinæ*. None of these authors seem to have noticed the condition of the anterior tarsi of the ♂, which, I think, finally disposes of some of the

doubts regarding the group. They have three joints slightly dilated, the 1st linear, the 2nd and 3rd sub-oval, and all furnished beneath with two rows of fine, ragged squamæ. This character effectually separates the group from both *Callistus* (which has brush-like soles to its ♂ fore tarsi, and has been therefore rightly placed with the *Chlœniina*), and the *Bembidiina*, which have, as is well known, two unequally dilated joints in the ♂. I have examined the ♂ tarsi in *Eudalia*, *Amphithasus*, *Anchonoderus*, and *Lachnophorus*. Schaum believed the group was closely allied to the *Odacanthina*, and that the connecting link was the curious *Selina Westermanni* of S. Eastern Africa. The discovery of a new genus in Australia, *Eudalia* (Casteln.), confirms, in a decided manner, the justness of this conception. *Eudalia*, in fact, has the greatest resemblance to certain species of *Anchonoderus* (sub-fam. *Lachnophorina*), but, at the same time, possesses some of the essential characters of the *Odacanthina*, especially the dorsal position of the lateral borders of the pronotum, which leave the convex flanks visible from above; it is, in fact, very closely allied to *Odacantha*. On the other hand, a new genus belonging to the present sub-family (*Amphithasus*, to be described presently) connects the group very clearly with the *Anchomenina*; and another new genus, which will be described in a future paper, has many of the characters and the general form of *Anchomenus*, with the trophi and truncated elytra of *Casonia* (sub-fam. *Odacanthina*). Other links occur between the *Anchomenina* and *Coptoderina*, &c.* In short, it is clear that many closely allied sub-families, hitherto included in that indefinable assemblage, *Truncatipennes*, are but modified *Anchomenina*, forming so many distinct branches from that same stem, and each specialized in its own separate direction. Such unequal ramification cannot be represented to the mind except by an imaginative effort, and hence probably the absence of attempts to establish a genealogical system of classification, instead of a unilinear one, condemned in theory by every Naturalist, and yet continually being attempted in practice.

The name of the group, *Anchonoderina*, was ill-chosen by Lacordaire, *Lachnophorus* being the more typical genus. In fact, it is doubtful if *Anchonoderus* can stand as a generic name. The characters which distinguish the sub-family are as follows:

* One of these singular forms is *Sphallax peryphoides*, from New Zealand, described by me in this Magazine Vol. iv, p. 65), of which I have since seen a specimen in the British Museum, ticketed "*Actenonyx bembidioides*, White." The generic characters given by White are meaningless and misleading, although there is no doubt the two names refer to one and the same species. This curious little insect has the solid horny ligula of the *Helluonina*, but no other resemblance whatever to that group. It has the broad triangular mesothoracic epimera (and the facies) of the *Bembidiina*, but truncated elytra and thickish oval terminal joints to the palpi. Unless it be considered an anomalous form of the *Odacanthina*, it must form a distinct equivalent group, under the name of *Actenonycina*.—H. W. B.

Labrum quadratum, antice truncatum. Palpi plus minusve pilosi, articulo ultimo elongato, apice angustato; plerumque fusiformi vel ovato, apice submembranaceo, abrupte acuminato. Ligula apice truncata, bisetosa, paraglossis angustis, ligulâ longioribus, apice liberis. Antennæ filiformes, articulis basalibus hirsutis, pubescentia densa ab articulo 3^{io} vel 4^{io} basi incipienti. Elytris apice haud sinuatis, obtuse rotundatis vel truncatis. Pedes omnino pubescentes, tarsis 3 articulis tribus basalibus leviter dilatatis, angulis rotundatis, dense pilosis, plantis biserialim squamosis. Episterna mesothoracica angusta, parallela, coxas haud attingentia.

SYNOPSIS GENERUM.

A. *Palporum articulus ultimus sub-linearis.*

EUDALIA, Casteln. Corpus crebre punctatum, elytris oblique truncatis.

AMPHITHASUS, n. g. Corpus læve, elytris recte transversim truncatis.

ANCHONODERUS, Reiche. Corpus crebre punctatum, elytris apice rotundatis.

A.A. *Palporum articulus ultimus fusiformis, apice acuminato.*

* *Corpus supra punctatum.*

LASIOCERA, Dej. Antennæ articulis nonnullis dilatatis, setis longissimis instructis.

LACHNOPHORUS, Dej. Antennæ simplices, dense pubescentes.

** *Corpus supra glabrum.*

EUCÆRUS, Leconte.

A.A.A. *Palporum articulus ultimus tumidus, apice abrupte acuminato.*

CHALYBE,* Casteln. Caput supra planatum, grosse punctatum.

EGÆ, Casteln. Caput supra convexum, læve, postice collo brevi constrictum.

SELINA, Motschulsky. Caput supra convexum, læve, postice collo elongato constrictum.

The genus *Camptotoma* (Reiche), introduced by Lacordaire into the group, is unknown to me, and can scarcely, according to the characters given, belong to the *Lachnophorinæ*. *Stigmaphorus* (Motschulsky), is founded on species of *Lachnophorus*, without any differential character of the slightest value. *Eucærus* and *Eudalia* are here incorporated for the first time with this sub family.

The great majority of the genera and species belong to the tropical and warm parts of America, from the Rio de la Plata to California. *Lasiocera* is peculiar to tropical and sub-tropical Africa and Asia; *Eudalia* occurs only in the hotter parts of Australia.

The *Lachnophorinæ* are insects below the medium size of the *Cara-bidæ*. In facies they (*Lachnophorus*, *Lasiocera*, *Chalybe*), resemble *Bembidiinæ* of the genus *Tachypus*, or (*Eudalia*, *Amphithasus*, *Anchono-*

* *Nomen prius usitatum, Lepid., Duponchel, 1836.—Ede.*

derus), the true *Anchomeni*, e. g., *A. albipes* and *oblongus*; but the extreme forms of *Ega* and *Selina* remind one rather of *Anthici* or ants. They inhabit moist situations, running nimbly over muddy edges of pools or about the roots of herbage.

Genus EUDALIA.

Castelnau, Trans. Roy. Soc. Victoria, pt. ii, vol. viii, p. 102.

The author of the genus gives scarcely any characters, and places it in the sub-family *Otenodactylinæ*, from which the distinctly truncated elytra distinguish it. On dissection, I find the ligula rather short, triangular, with two long setæ on its straight upper edge, besides a short one at the angles, which are rectangular; the paraglossæ are quite free from the upper part of the sides, narrow, and incurved. The mentum is broad, with a very broad simple tooth in the middle, much shorter than the wings, which are externally rounded. The palpi have the terminal joints very nearly cylindrical, in the labial less so than in the maxillary, in which latter they equal in length the preceding. The maxillæ are strongly hooked and densely spinose within. The surface of the body is punctulated, and, with the legs, clothed with short pale pubescence, as in *Lachnophorus*; the slightly dilated male tarsi are also precisely of the same form as in that genus. The truncature of the elytra is, however, more decided, and is slightly incurved, and the head forms a very distinct neck at its junction with the thorax. The marginal stria of the elytra is not continuous along the apical margin.

E. LATIPENNIS, Macleay, Trans. Ent. Soc. N.S.W., 1864, p. 108.

E. WATERHOUSEI, Casteln., l. c., p. 102.

EUDALIA MACLEAYI, n. sp.—*Nigro-æneus, subnitidus, palpis, mandibulis, antennarum articulis 3^{to} et 4^{to} basi pedibusque rufo-testaceis, geniculis obscuris; capite punctato, vertice lævi; thorace capite multo angustiori, grosse punctato, disco antice sublævi, oblongo, ante basin constricto; elytris latis, magnis, sub-quadratis, punctato-striatis, interstitiis sparsim punctatis, sternis abdoninisque basi grosse punctatis.* Long. 4 lin. ♂ ♀.

New South Wales. Received from W. McLeay, Jun., Esq., Sydney.

Genus AMPHITHASUS, g. n.

Corpus glabrum, caput breviter ovatum, oculis haud exstantibus. Palpi elongati, graciles, breviter pubescentes, articulo ultimo angusto, apicem versus gradatim acuminato. Antennæ ab articulo 2^{do} dense pubescentes. Thorax capite vix lator, cordatus. Elytra convexa, apice late obtuse truncata, stria marginali per apicem continuata, supra profunde punctato-striata, interstitiis lævibus. Pedes tenuiter, tarsi densius, pubescentes.

In facies, the species on which this genus is founded greatly re-

sembles *Anchomenus albipes*. It is probable that *A. elegans*, Dej. (Sp., v, 725), belongs also to the genus; but *A. dimidiaticornis*, Dej., is most likely a small species of *Oxycrepis* (*Feroniinae*).

AMPHITHASUS TRUNCATUS, n. sp.—*Piceo-niger*, glaber, epistomate, labro, palpis, pedibus, antennarumque articulis sex basalibus flavo-testaceis, 7—11 albis; capite lævi, oculis vix prominentibus; thorace capite cum oculis paulo latiori, elongato-cordato, postice modice haud abrupte coarctato, supra convexo, lævi, marginibus anticis et posticis grosse punctatis; elytris oblongis, apice late obtuse truncatis, valde convexis, profunde striatis, striis concinne regulariter punctatis, interstitiis impunctatis; abdomine rufo-piceo.

Long. $3\frac{1}{4}$ lin.; lat. elytr. $1\frac{1}{4}$ lin.

Ega, Upper Amazons.*

Genus ANCHONODERUS, Reiche.

Few modern genera have been introduced in a more confused manner than the present. It was placed near *Anchomenus* by its author, and the long definition omits its most distinguishing characters. The type species cited, *Platynus elegans* (Brullé), cannot be separated from *Lachnophorus*, and the second and third species quoted by the author flatly contradict his generic characters "*elytra apice rotundata, haud sinuosa, interstitiis granulatis*," both those species being described by Dejean as having smooth interstices, and (at least, the first) sinuated elytra. The genus need not be withdrawn on account of the type belonging to a previously described and still maintained genus, as some of the species included in it (*binotatus*, *subæneus*, *rugatus*, &c.) form a well-defined group, distinguished from *Lachnophorus* by the much less prominent eyes, rounded apex of the elytra without trace of truncature, and by the less fusiform shape of the terminal joint of the palpi.

ANCHONODERUS SUBTILIS, n. sp.—*A. subæneo* (Reiche) *similis, magis depressus, oculis majoribus, elytris minus profunde striatis*. *Piceo-niger, subnitidus; antennis rufo-testaceis, articulo basali, palpis, pedibusque flavo-testaceis; capite thorace latiori, supra lævi; oculis magnis; thorace cordato, postice minus quam in A. subæneo angustato, angulis posticis productis, supra subtilissime coriaceo; elytris parum convexis, haud profunde, acute striatis, striis vix punctulatis, interstitiis vix convexis, subtilissime confuse punctulatis, marginibus tenuiter rufescentibus*.

Long. $3\frac{1}{2}$ lin.

Guatemala. One example in Mr. E. Brown's collection. In the finely-impressed and almost impunctate striæ it agrees with *A. unicolor* of Chaudoir, which, however, has black legs. It has great general resemblance to the common *A. subæneus* of Columbia and Central America.

* Except when otherwise stated, the new species are described from examples in my own collection.—H. W. B.

ANCHONODERUS SCABRICOLLIS, n. sp.—*Fusco-æneus*, pilis longioribus vestitus, antennarum basi, palpis, pedibusque albo-testaceis; capite thorace paulo angustiori, suprâ passim haud profunde punctato; labro, antennis (basi albo excepto), mandibulisque rufo-piceis; thorace cordato, lateribus juxta angulos posticos rectis, suprâ grosse cicatricoso-punctato; elytris oblongo-ovatis, profunde crenato-striatis, interstitiis punctulatis leviterque plicatis, utrinque maculis 2 rufo-testaceis, quarum una curvata prope humerum, altera major ante apicem, aliquando usque ad apicem extensa, ornatis; corpore subtus nigro, nitido, punctato.

Long. $2\frac{1}{2}$ lin., ♂ ♀.

Apparently allied to *A. undatus*, Chaud., but much smaller; differs from *A. rugatus*, Reiche, by the colour of the antennæ and sculpture of the elytral interstices. The facies, sculpture, and pubescence would justify its being placed in *Lachnophorus*; but the head being narrower than the pro-thorax, and the eyes but moderately prominent, show its nearer affinity with *Anchonoderus*. The thorax is very much rounded on the sides, greatly and abruptly constricted at the base. The punctuation of the elytral striæ is coarse near the base, less distinct near the apex, and the punctures crenulate only the interstices on the outer side of each stria. The pale spots are variable in size, the apical one forms a waved macular band on interstices 3—9, but sometimes extends along the margin to the apex.

Rio Janeiro. Collected by the late Mr. Squires and Rev. Hamlet Clark. In my own collection and that of Mr. Grut.

Kentish Town: June, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

PAPILIO CONSTANTINUS, n. s.

♂. *Upper-side*: rich brown-black, both wings crossed with a yellowish-white band, commencing midway at the inner margin of lower wing, and curving outwards to the apex of the upper wing. Through the lower wing this band is continuous; through the upper wing it is broken into spots, which spread inwards in a narrow, irregular band to the anterior margin. In the cell near the extremity an oval spot; following the outer edge of both wings is a series of yellowish-white spots, placed in pairs between the nervures. Tails rather short, spatulate, and marked on each side with yellowish-white.

Under-side: marked as above, but a lighter brown, and the lower wing is of a lighter shade than the upper one. Between the nervures of the lower wing, and near the apex of the upper wing, are strongly-defined streaks of dark brown.

Expanse $3\frac{1}{2}$ inches.

Habitat: Ribé, East Africa.

This species resembles *Pap. Thersander* (the latter may probably be the ♀ of *P. Phorcas*), but differs in the band crossing the wings being curved outwards, the spot in the cell, and the very different colouring of the under-side.

ACRÆA SATIS, n. s.

Upper-side white, nervures brown; base of upper wing, brown, which is continued round the upper margin; a broad band of brown crosses midway from the anterior margin, narrowing towards the anal angle; at the upper-side of this band beyond the cell is a large white spot, which is bordered on the outer margin with brown; beyond this spot the remainder of upper wing is a dusky-grey. Lower wing crossed midway by a broken, irregular band of brown spots. Hind margin bordered with brown, containing white spots, which are most distinct towards the anal angle.

Under-side: as above, but rather lighter in colour; the band crossing the lower wing and the spots round the hind margin much more distinct and tinged with yellow.

Expanse $2\frac{1}{10}$ inches.

Habitat: Ribé.

This fine *Acraea* seems allied to the Madagascar species represented by *A. Hova*, of Boisduval.

EURYPHENE RIBENSIS, n. s.

♂. *Upper-side*: dark brown, crossed vertically with bands of purple.

Under-side: base of upper wing brown, which is continued across midway, then changes to an ochre-yellow, and on the upper margin to grey; the hind margin is light brown; lower wing crossed vertically with alternate bands of light brown and grey, curving inwards, the hind margin being brown.

Expanse 2 inches.

Habitat: Ribé.

EURYPHENE CAMARENSIS, n. s.

♂. *Upper-side*: dark brown; both wings crossed with bands of purple curving inwards.

Under-side: red-brown, upper wing crossed vertically midway with a narrow line of darker brown; beyond, a second narrow line, which is bordered on the outer edge by five small, black spots, which are edged on the inner side with grey; lower wing, crossed diagonally with a distinct, narrow band of dark brown; near the base is a brown spot, and following the outer margin a narrow waved line.

♀. *Upper-side*: brown, upper wing crossed vertically by a narrow band of pale yellow, beyond by a double, narrow, undulating line of yellow; near the apex, which is tipped with white, are three small, white spots; lower wing brown, with a large patch of light yellow crossing the wing from the anterior margin, and narrowing at the inner margin; a double narrow band near the hind margin and curving inwards.

Under-side: pale yellow, upper wing crossed midway by a line of brown; beyond, a broader band of brown, bordered on the outer side with seven small, brown spots, the four upper ones being edged with white on the inner side; lower

wing crossed, midway from anterior to inner margin, by a distinct, narrow band of brown; an undulating line of brown follows the outer margin of both wings.

Expanse, ♂, 2 inches; ♀, 2½ inches.

Habitat: Camaroons.

EURYPHENE CERCESTIS, n. s.

♂. *Upper-side*: rich purple, changing to brown, and iridescent; the cell of the upper wing barred across with light and dark brown; beyond the cell, two spots of light brown.

Under-side: grey, mottled with light brown, a waved line of darker brown following the outer margin of both wings; near the base of the lower wing three black spots, two of them confluent.

Expanse 2 inches.

Habitat: Camaroons.

GODARTIA CROSSLEYI, n. s.

♂. *Upper-side*: thorax, black, with a grey streak down the centre; abdomen, bright rufous-brown.

Fore-wing, deep black, crossed diagonally by two broken bands of irregular longitudinal markings of yellowish-white, one band crossing the cell, the other above it; beyond the upper one are four small, distinct spots of yellowish-white, forming a narrow band; the outer margin is bordered with seven clear, white spots.

Hind wing, black, broadly marked at the base and centre with yellowish-white, broken on the outer edge into seven oval spots; following the outline of outer margin, a band of small spots of a similar colour, the outer margin edged with eight clear white spots.

Under-side: thorax, head and legs black, with numerous small, white spots; base of wings brown; markings as on the upper-side, but not so clear in colour.

♀. Does not materially differ from the male.

Expanse 3½ inches.

Habitat: Camaroons.

I have much pleasure in naming this fine species after Mr. Alfred Crossley.

GODARTIA TRAJANUS, n. s.

♂. *Upper-side*: body brown; thorax with a grey line down the centre.

Fore-wing, black, the base and lower half of the cell bright, rufous-brown; a broad diagonal band of yellowish-white crossing the wing midway, beyond this a narrow curved band of seven clear, white spots; two small white spots near the apex; a line of grey borders the inner margin.

Hind-wing, brown-black, the centre broadly marked with grey; a band of small, grey spots follows the outline of the hinder margin.

Under-side: head, thorax and legs black, with small white spots; fore wing marked as on the upper-side.

Hind-wing, entirely brown, changing to bright rufous brown at the inner margin; between the nervures are streaks of darker brown.

♀. Does not differ materially from the male.

Expanse 3½ inches.

Habitat: Camaroons.

[To be continued.]

Occurrence in Britain of Comptoschilus palpalis, Er. ; a genus and species of *Oxytelides* new to our list.—I have recently taken a single example of this interesting addition to our Brachelytrous Fauna, by sweeping on the sides of a ditch near Tunbridge. In facies the insect strongly resembles *Acrognathus*, in which genus it was placed by Erichson ; but its much smaller size, $1\frac{1}{2}$ lin. (Engl.), at once readily distinguishes it from *A. mandibularis*.—T. V. WOLLASTON, Dry Hill, Tunbridge, 16th June, 1871.

Notes on some recently described species of Oxytelus allied to O. depressus.—Herr Czwalina, in vol. xiv of the Berlin. Entom. Zeitschr, p. 419, *et seq.*, has recently described three new species of the *depressus* group (in which the head, thorax, and elytra are very thickly and finely longitudinally striate), taken near Königsberg in company with that common species ; thus increasing Pandellé's list (in Grenier's Cat. pt. 2) of that group to the number of *twelve*, and suggesting a doubt whether Gravenhorst *redivivus* would know his own property.*

Czwalina thus tabulates his new species and their allies :—

- | | |
|---|-------------------------------|
| 1a. Head and thorax with smooth spaces | <i>speculifrons</i> , Kraatz. |
| 1b. " " without " " | 2. |
| 2a. Anterior tibiæ externally simple | <i>depressus</i> , Grav. |
| 2b. " " " slightly emarginate | 3. |
| 2c. " " " moderately deeply emarginate or notched | 4. |
| 3a. Antennæ with four larger apical joints | <i>tetratoma</i> , Cz. w. |
| 3b. " " three " " " (as in all the other species) | <i>hamatus</i> , Fairm. |
| 4a. Upper angle of emargination of anterior tibiæ apparently acute, owing to thickly congregated bristles ; abdomen finely but distinctly punctured | 5. |
| 4b. Upper angle of emargination of anterior tibiæ rounded, the bristles being more removed from each other ; abdomen scarcely perceptibly punctured | <i>Saulcyi</i> , Pand. |
| 5a. Thorax almost twice as broad as long | <i>transversalis</i> , Cz. w. |
| 5b. " only half broader than long ... | 6. |
| 6a. Large ; elytra impunctate | <i>pumilus</i> , Er. |
| 6b. Small ; elytra somewhat remotely but distinctly punctured | <i>affinis</i> , Cz. w. |

The natural sequence of these species is stated by the author to be thus : *speculifrons*, *transversalis*, *Saulcyi*, *depressus*, *hamatus*, *affinis*, *tetratoma*.

O. transversalis (p. 419) is described as equalling large *depressus* in length, but rather broader, of a deeper black, with pitchy legs ; the base of the tibiæ rather yellow, but the claw-joint dark. Its antennæ are somewhat stouter at the apex, and abdomen rather more strongly punctured above, the sixth segment beneath in the ♂ having in the middle two longish and not very approximated tubercles, with a fine granule between each of them and the side margin. The hind margin of the seventh segment in the same sex is widely and not very shallowly emarginate in the middle, and has a longitudinal callosity very near each side margin. It is

* The description of *O. tetracarinatus*, Block, published in 1798, must have been much in advance of its time ; as that insect is identified with the subsequent *O. depressus* of Gravenhorst in V. Harold's Col. Heft, vi, p. 101, in the face of the other closely allied eleven species now known.—E. C. R.

smaller than *pumilus*, which it resembles in colour, but from which the characters in the table will separate it. The author queries this species as probably identical with *Fairmairi*, Pandellé, but is not able to reconcile with it that author's description of the punctuation of the abdomen (*punctis densis evidentioribus*), nor of the abdominal eccentricities of the male (*cristulis sulco separatis*).

O. affinis (p. 420) is described as like *hamatus*, but with the legs, and especially the tibiæ, darker; and the denticle on the sixth abdominal segment in the ♂ beneath smaller, with the bent part more sharply deflexed. The seventh segment has also in the middle two longish tubercles slightly directed inwards obliquely, and is ciliated with golden-yellow hairs at the apex, somewhat concealed by the denticle of the sixth segment: its posterior margin is also rather triangularly emarginate in the middle.

O. tetratoma (p. 421) is more attenuated in front and behind than any of its allies. Its abdomen is more thickly and strongly punctured on the upper side than in *O. depressus*: its sixth segment in the ♂ beneath having the apex slightly emarginate, with a small granulation on each side, between the middle and side margin; and its seventh segment in the same sex being produced longly and sharply at the apex.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., June, 1871.

Captures of Coleoptera at Studley, near Ripon.—I have recently taken the following species at Studley. By sweeping, chiefly under some fir-trees: *Aleochara ruficornis*, two or three; *Haploglossa pulla*, *Homalota hepatica*, two; *H. elegantula*, Brisout (only recorded as British, hitherto, from Monk's Wood, taken by Mr. Crotch); *Atomaria diluta*, one (my friend, Mr. T. S. Mason, also found a specimen of this insect in moss, near the same place); several *Rhinomacer attelaboides*, of a yellowish tone, unlike the Rannoch greenish specimens; *Cryphalus abietis*; one of the narrow, bright, and coarsely punctured *Haplocnemus nigricornis*; *Limonium cylindricus*, *Meligethes symphyti* (there were no blue-bells near), and both sexes of *Colo. dentipes*.

In moss, by the side of a little hill-side stream, *Mniophila muscorum* was abundant, together with a few *Quedius umbrinus*; here I also took another *Aleochara ruficornis*, *Bolitobius cingulatus*, and *Badister humeralis*.

Under bark of a felled elm, *Ips quadriguttata* was abundant, with a few *Agathidium nigripenne*.

In the wet shingle by the side of the Skell, the rare and curious little Trichopterygian, *Actidium concolor* (Sharp), and *Thinobius longipennis* were not uncommon, together with three or four of the pale form of *Homalota exilis*, simulating *H. pallens*, and *Philonthus rubripennis*.—EDWARD A. WATERHOUSE, Fountain's Hall, Ripon, June 14th, 1871.

Capture of Odontæus mobilicornis at Cirencester.—On the evening of the 24th inst., a fine male of this rare Lamellicorn flew into the college here. He now stops a gap in my collection.—W. R. McNAB, Royal Agricultural College, Cirencester, 26th May, 1871.

Mr. Murray's List of Swiss Butterflies.—Corrections, &c., to the list of Butterflies captured by me last year in Switzerland. (See E. M. M., vol vii, p. 258.)

Argynnis Daphne (?) : this should be *A. Ino*. *Thecla pruni* : a mistake for *Th. ilicis*. *Erebia Pronö* : the form which I took is placed in the British Museum as *Erebia Arachne* (Fabr.), var. *Pitho* (Hüb.). In addition to those enumerated in my list, I took *Erebia Pirene* plentifully above Sefry and in other places.—R. P. MURRAY, Mt. Murray, Isle of Man, June 6th, 1871.

Tæniocampa gothicina, Herrich-Schäffer, in Morayshire.—A moth occurs here not uncommonly at willow blooms, in the early spring months, which I hitherto have regarded as a pale variety of *Tæniocampa gothica*, but which I now find agrees in every respect with *Orthosia gothicina*, Herr.-Schäffer (*Tæniocampa gothicina*, Guenée).

The markings are similar to those of *gothica*, but the colour is grey and reddish-brown; the space between and under the stigmata light reddish-brown, instead of black, as in *gothica*; the stigmata are delicately outlined with yellow.

As Herrich-Schäffer considers *gothicina* a good species, and it is also regarded as such by Guenée & Walker (Brit. Mus. Cats.), I suppose it must be now added to our British lists.

I regret not having secured a series, owing to the reason above stated. A solitary specimen in my cabinet, taken I believe in 1868, is the only one I have retained.

The fact that *gothicina* is said to occur in Lapland, would seem to suggest the likelihood of the Forbes species being correctly referred.—GEO. NORMAN, Cluny Hill, Forbes, June, 1871.

[There can be little doubt that Mr. Norman has correctly identified his insect with Herrich-Schäffer's species. Guenée simply refers to the figure, as he had not seen the insect. The total obliteration of the conspicuous black marking between the stigmata, and the yellow outlining, give it a very peculiar appearance; in other respects, *i. e.*, in form, and arrangement of markings, the two forms or species are identical. In the Stettiner Entom. Zeitung for 1861, p. 367, Staudinger notices a ♀ example taken by Wocke, in Finmark, as a peculiar form of *gothica*, and in his new Catalogue he (presumably from locality) refers this to *gothicina*, which he places as a variety of *gothica*. We offer no opinion as to the specific rights of *gothicina*. At all events, it is a very strongly marked form, and the fact of ordinary *gothica* occurring in the same locality does not militate against the distinctness of the two. Mr. Norman's citation of Walker's Catalogues rather amuses us; his Catalogues are absolutely useless, so far as authority is concerned.—EDS.]

Variety of Cidaria suffumata.—I have a very pretty variety of *Cidaria suffumata*, which was taken here last month by Mr. J. B. Vickerman. The specimen has the basal blotch, and the broad median band of the fore-wings as in ordinary specimens, but considerably darker in colour, whilst nearly the whole remaining portion of the wings is of a beautiful creamy-white; the hind-wings are brownish-grey at the base as usual, but with the outer half of the creamy-white colour of the fore-wings.—GEO. T. PORRITT, Huddersfield, June 9th, 1871.

Sialis fuliginosa in the Lake District.—The only pair of a *Sialis* in a series of

miscellaneous *Neuroptera* collected by Mr. Stainton in the English Lake District during the first half of this month, are *S. fuliginosa*, taken at Ambleside (River Bothay), on the 5th inst. The species no doubt occurs all over Britain. I have now seen it from Perthshire (Rannoch), Westmoreland (Ambleside), Surrey (near Box Hill and Haslemere), and Dorsetshire. — R. McLACHLAN, Lewisham, 17th June, 1871.

Some considerations as to Mr. Lewis's views concerning Entomological Nomenclature.
—Mr. Lewis's paper in the last number of this magazine has induced me to pen the following (non-editorial) remarks :—

There are many points upon which I most thoroughly and heartily agree with Mr. Lewis; there are others upon which I cannot, in accordance with my predilections, possibly agree with him. I agree with him that the record of a single previously unnoticed fact, in the economy of a common insect, is worth volumes of dissertations on nomenclature. I agree with him in his unsparing condemnation of a class of entomologists whom he aptly terms "resurrection men." But I do not agree in condemning them *because* they are resurrection men. I go further, and avow my belief that, when they disinter an old name, concerning the correct application of which there can be no doubt, they deserve praise rather than condemnation;* they fulfil one of the most necessary requirements of natural science. I condemn them because, as a rule, they, as Mr. Lewis says, "take to their studies" "the predispositions of the antiquary," and, in their reverence for old names, raise ghosts, not entities; in other words, they seek to overthrow names thoroughly substantiated, to give place to others, nine-tenths of which have the merest shadow of a right to the superior position their admirers would allot to them; names that should sink into oblivion, or rest quietly in the list of "*species indeterminatas*." Furthermore, I agree with him that "it is expedient to have certainty in nomenclature." By all means: let us have certainty, and as soon as possible. The change of names that weighs so heavily upon Mr. Lewis is, in many cases, the result of the conscientious endeavours of entomologists to obtain that certainty. Mr. Lewis cries for it *now*; I am content to wait till I get it; or rather, I should say, neither hope nor expect to have it during my time. Mr. Lewis would obtain it by a heroic process—*aux grands maux, grands remèdes*,—and by applying his maxim "*communis error facit jus*," draw a line and say "henceforward there shall be no change; whatever may be the errors, or however glaring and ridiculous they may prove in the sequel, from this time they shall pass uncorrected; nay more, they shall no longer be considered as errors, but as unimpeachable truths." Surely Mr. Lewis, in promulgating his favourite maxim, must take to his studies the predispositions of the amateur, rather than the calm investigation of the naturalist; he must be of those who, having mechanically spaced out, labelled, and arranged their cabinets and collections, feel wrath at any audacious individual who may suggest to them that neither nomenclature nor sequence is correct. The application of Mr. Lewis's legal maxim is the greatest affront that could possibly be offered to an exact science. He ought to know that, however desirable and efficacious its application may be in legal matters, it cannot become law in natural science, because

* It matters to me not a jot whether such a name supplant another according to the rules of priority (which I hold sacred), or rank as a synonym only; in either case it is one step towards attaining certainty by legitimate means.—R. McL.

the very essence of the studies of the naturalist ought to be the exposure and obliteration of error; there can, in an exact science, be no "common error." It is true that the names of insects, or of any other natural productions, are not science in themselves, but they form an integral portion of science, and a common error can no more become law with them than in any other branch,—biology, for instance.

I agree with Mr. Lewis that "it is expedient to have no more synonymy,"—the word is the naturalists' *bête noire*; but the idea that it can be summarily put a stop to is profoundly Utopian. It is expedient there should be no more crime, no more deceit, in the world; and, as a consequence, no more prisons, police, and lawyers. But the evils exist, and the other *necessary* evils are required to keep them in check. Synonymy exists, and its existence renders necessary the evil that entomologists *must* waste precious time in unravelling it. The suppression of both crime and synonymy by a *fiat* is utterly impossible. I couple the words, but the existence of synonymy is too often owing to what are actual *crimes* against science. I hold that, when an entomologist describes an insect as new, without using every endeavour that is humanly possible to discover whether it be not *already* described, he commits one of the greatest of crimes against science. Mr. Lewis would condone this; and, by applying his maxim "*communis error facit jus*," absolve the evil-doers, and make their crime a virtue. Here again, it seems to me, that he shows the predispositions of the amateur, or, of the visionary. When that millennium shall arrive when everything is understood thoroughly all over the world, and the truth be completely arrived at in the natural way (not partially, by a glorification of error), there need be no more synonymy: synonymic lists will then be "*functi officii*:" till then it is to be hoped that we shall have many of them (there cannot be too many if conscientiously compiled), with all the synonyms, even if they extend to a page in length, fully enumerated under each species.

It is hardly necessary to explain that the foregoing remarks are made from a general point of view, and not from a lepidopterological one only. Having commenced my entomological studies as a lepidopterist, though possibly only as an amateur, it needs no great amount of discernment to make obvious to me the fact that British Macro-lepidopterists stand urgently in need of a thoroughly scientific monograph. Mr. Lewis's criticisms in his paper in our last number, and at the Entomological Society, show that he should possess the acquirements necessary for its production. Let us hope our lepidopterists are tired of the degrading publications that have been recently submitted to them; works in which descriptions and advertisements are unblushingly and inextricably blended. If, then, he will prepare such a work (*and include synonymy*), he will obtain the gratitude of his fellow-labourers; or, at any rate, by being able to arrange his collections *after his own method*, he will be spared the annoyance originating from the change effected by, and the want of unanimity in, the works of others.—B. McLACHLAN, Lewisham, 12th June, 1871.

On the rules and use of Synonymy: in reply to Mr. W. A. Lewis.—Mr. Lewis does not appear to have quite understood the passage which he has quoted in the current volume of Ent. M. Mag., p. 3., from one of my letters; and a full explanation is therefore desirable. In my paper on the Generic Nomenclature of Diurnal Lepidoptera (Journ. Linn. Soc., vol x, pp. 404—503), I observed that, "we must either

"take the earliest or the latest works of Linnæus to begin with; and, if we take the "earliest, we are met with the difficulty that Linnæus himself changed the names "of several of his own species in his different works." I allude here to the first edition of Linnæus' *Fauna Suecica* (1746), in which he has given names to many of the species described, but not to all. *With scarcely an exception, these names, applying to a great number of our commonest insects, were changed by Linnæus himself, in his Systema Naturæ* (ed. 10, 1758), and subsequent works. Should 1758 be eventually fixed, as will probably be the case, for the commencement of our specific nomenclature, that date will admit the important works of Poda, Scopoli, and Müller, without compelling us to return to the Linnean names of 1746. But the twelfth edition of Linnæus' *Systema Naturæ* (1767), is the date fixed by the Rules of the British Association for Zoological nomenclature; and these rules are at present considered binding on Zoologists. An international congress of naturalists would be very desirable to reconsider, and, if necessary, to revise, them.

One great object of synonymy is to attempt to utilise the whole of the accumulated literature of entomology; and the conscientious attempts which are now being made by Werneburg, Butler, Standinger, and others,* to apply the law of priority to entomology more thoroughly than formerly, will eventually, it may be hoped, place our nomenclature on a firmer basis than at present. Errors will of course occur, and some temporary confusion; but the difficulty caused by the doubt about the dates of 1758 or 1767 being the starting-point is limited, and can be got over. The changes necessitated by an application of the law of priority to the names of species are comparatively small, but appear more extensive than they really are, because they necessarily occur most frequently among common species. The real sources of confusion to be feared are not the honest applications of the law of priority, but the attempts to evade it, as in Guenée's substitution of his MS. name *Chortobius* for *Cæonympha*, Hübner, merely because the French entomologists reject all Hübner's generic names, even if they have been adopted by every one else.

I cannot admit that synonymy is of less use now than formerly; for no one can have access to all the books in any branch of entomology; and, if he have a limited library, and identify an insect by a name which has been overlooked by later authors, it is useless to him. If the law of priority were rescinded, no one would any longer take the trouble to identify any species he intended to describe as new, and we should soon have twenty new names for every old name, which would otherwise have been restored.

In the compilation of my forthcoming "Catalogue of Diurnal Lepidoptera," there were but two courses open to me, either to adopt Doubleday, Hewitson and Westwood's "Genera of Diurnal Lepidoptera," as an unassailable starting-point (which would correspond to the course advocated by Mr. Lewis), or to consult the whole literature of the subject, and test every name employed by the Rules of the British Association. This latter is the system of which Mr. Lewis disapproves so much.—W. F. KIRBY, Dublin, June 2nd, 1871.

Entomological Nomenclature.—I do not think Mr. Lewis will find himself mistaken in expecting the support of Lepidopterists in the opinions he has so ably advanced. It certainly is high time that we had some recognised nomenclature in

* A careful perusal of Von Harold's paper on Nomenclature (*Coleopterologische Hefte*, vi, 1870, pp. 37—69), is recommended to all who doubt the utility of the so-called "resurrection men."—E. C. R.

entomology; the question is, whose business is it to attempt a settlement? I venture to suggest that the Entomological Society* should devote itself to the work, and that a list should be published under its sanction, the names in which should be exclusively used by the members, and in all the Society's publications: I do not see how it can be done otherwise. Surely the science has advanced to a stage which would allow of this being done. At present, we are at the mercy of individuals, and one name succeeds another without the slightest probability of any becoming permanent. Doubtless there are many difficulties in the way; if Mr. Lewis' recommendation that all names but those now in use be ignored, be followed out, the question will arise, which of the two or three names now in use for the same species is to be retained?

Another point for consideration is the arrangement of the genera and families. Is Doubleday's or Stainton's to be followed, or neither? Which is the most natural place for the *Pseudo-Bombyces* or *Cuspidates*? Are they natural connecting links between *Geometra* and *Noctua*? If not, why are they placed between them?†

I, for one, hope the subject will be thoroughly ventilated, and that the result will be a list published by the Entomological Society.—HY. ULLYETT, Folkestone, June 10th, 1871,

ENTOMOLOGICAL SOCIETY OF LONDON, 1st May, 1871.—PROFESSOR WESTWOOD, M.A., F.L.S., Vice-president, in the Chair.

Mr. Higgins exhibited collections of insects from Borneo and Natal. Among the latter were bred specimens of some of the larger *Bombyces*, and coloured representations of their larvae, obtained by a process which was termed chromo-photography.

Mr. Meek exhibited the example of *Nyssia lapponaria* noticed in our two last Numbers.

The Rev. R. P. Murray exhibited a collection of insects recently formed by him in Switzerland.

Mr. Bicknell exhibited (for Mr. Cowan) an extraordinary example of *Gonopteryx rhamni*, captured at Beckenham, in March. This individual was a ♂, having the costal margin of each anterior wing, and of the right posterior wing, broadly but unequally suffused with crimson.

It having been suggested that the insect might possibly have been killed by cyanide of potassium, and had thus changed its colour, Mr. Cowan said he had killed it by means of chloroform, and moreover it was in the same condition when caught. Mr. McLachlan thought the wings had probably been in contact with some chemical substance during hibernation.

Mr. Stainton exhibited coloured drawings of the mines of *Micro-Lepidoptera* in leaves, sent from New Granada by Baron Von Nolcken.

Mr. Champion exhibited the British example of *Scydmanus rufus* noticed in the Ent. M. Mag. for May last.

Mr. McLachlan exhibited the tusk of an Indian elephant, lent to him by Dr. Sclater. The root portion of this tusk was much eroded and blackened, and on the decayed portion were multitudes of large eggs, arranged side by side in rows. Dr. Sclater desired information as to the insect or other animal that produced the eggs, but no member present was able to afford any information. It was suggested that the creature probably only took advantage of a diseased condition, and fed upon the morbid secretions, and did not in reality produce the decay. The occurrence was said to be not uncommon in India, and always with the female elephant.

* See the recent notices on our wrapper of the Catalogue of British Neuroptera, "part of a proposed General Catalogue of the Insects of the British Isles;" published by the Entomological Society of London.—Ede.

† Mr. Lewis has entered fully into this matter in a paper that will shortly be published by the Entomological Society.—Ede.

Mr. W. A. Lewis exhibited an earthen jar, like a tobacco jar, in which the inhabitants of Pekin were said to confine a large beetle, which they used for sporting purposes. One insect was placed in each jar, and, being fed only upon water, became very ferocious, when it was pitted against another. Professor Westwood reminded the meeting that the Chinese were already known to employ *Mantida* for fighting.

Mr. Lewis, Mr. McLachlan, and others, read extracts from the daily papers respecting so-called showers of insects or other organisms at Bath, the nature of which had baffled the 'scientific men' of that city. Professor Westwood thought the creatures might be *Branchypus stagnalis*, an Entomostrakon.

Mr. Müller read notes on a gall on *Pteris aquilina*, found by Mr. Rothney, at Shirley, and referred it to *Diastrophus rubi*.

Mr. W. F. Kirby communicated notes on the synonymy of certain European *Lepidoptera*.

Professor Westwood read descriptions of some new species of exotic *Lucanida*.

Mr. H. W. Bates read a description of a new genus of longicorn beetles, from Matabili Land, South Africa, sent by Mr. Baines, remarkable for the enormously swollen third antennal joint: and also of a new species of *Mallaspis*, from Chiriqui.

5th June, 1871.—J. W. DUNNING, Esq., M.A., F.L.S., Vice-president, in the chair.

The Secretary read a letter from the Rev. L. Jenyns, of Bath, respecting the showers of 'insects' said to have occurred there. He had examined some of the creatures and found they were *Infusoria*, probably *Vibrio undula*, Müller. Some were swimming freely in the water, others were congregated in spherical masses, enveloped in a gelatinous substance. They fell during heavy rain after a violent squall of wind.

Mr. Butler exhibited a number of *Lepidoptera*, chiefly butterflies, upon which he and Mr. Meldola had experimented with dyes; the results were very striking. Having used a solution of soda in order to fix aniline dyes, he found the insects immersed in it discharged the colouring matter of the scales, and Mr. Meldola, by adding an acid, precipitated the pigment. It was also stated that exposure to the fumes of ammonia changed the colours.

Mr. Bicknell exhibited several examples of *Gonopterys rhamni*, which he had exposed to cyanide of potassium, as suggested at the last meeting; the yellow was changed to orange-red. Mr. Smith said that cyanide changed the colour of wasps to vermilion.

The hope was expressed that these interesting experiments would not be taken advantage of by unscrupulous dealers, having regard to the prevailing disposition to obtain varieties of British *Lepidoptera*.

Mr. W. C. Boyd exhibited *Rumia cratægata* with the apical portion of one wing changed to brown; it was caught in that condition.

Mr. Müller exhibited the bell-shaped nest of a spider (*Aglena brunnea*); and also fresh galls on birch, produced by an undescribed species of *Phytoptus*.

Mr. Smith exhibited three rare species of *Hymenoptera*, sent by Mr. J. C. Dale, and captured at Glanville's Wootton. They were *Myrmecomorphus rufescens* (*Proctotrypidæ*), *Ichneumon glaucopterus*, and *Osmia pilicornis*.

Mr. Holdsworth, of Shanghai, communicated notes on the method employed by the Chinese in rearing the silk-producing *Bombyx Pernyi*.

Mr. Kirby communicated synonymic notes on *Lepidoptera*.

Mr. Baly communicated "Descriptions of a new genus, and of some recently discovered species of Australian *Phytophaga*."

Mr. Butler read "Descriptions of five new species, and a new genus, of diurnal *Lepidoptera*," sent from Shanghai by Mr. W. B. Pryer.

ON THE ORIGIN OF BRITISH LEPIDOPTERA.

BY R. C. R. JORDAN, M.D.

The British Isles were, without doubt, peopled with insects by migration from the continent; could we have the how, when, and where, of this exodus laid bare before us it would be of intense interest, and it may be, therefore, of some use to see what the British *Lepidoptera* teach us upon this subject.

It has seemed to me that they may be arranged under the following heads:—

1. Migrants of the glacial epoch.
2. Migrants of a warmer post-glacial epoch.
3. Direct migrants.
4. Western migrants.
5. Autochthones.
6. Naturalized species.

These may be discussed in the order here set down:

1. *Migrants of the glacial epoch.*

At a comparatively recent geologic period, England was a country of frost and ice, not differing much from what Greenland now is; plants flourished in our land before this, and probably, therefore, insects also; of these we have no known record that can be traced; they were destroyed by the age of ice which followed; but this very period of death has yet left an indelible stamp on both the flowers and insects of our land; to it we owe the saxifrages and other Alpine plants of our northern mountains, and to it with equal certainty we owe such insects as *Erebia Epiphron* and *E. Medea*, *Pachnobia alpina*, *Dasydia obfuscaria*, *Psodos trepidaria*, and probably other more exceptional instances, such as *Cænonympha Davus*, *Larentia cæsiata*, *L. flavicinctata*, &c. If we take *Erebia Epiphron* (*Cassiope*) as an illustration, it is self-evident that it could not have reached Sca-fell from the Alps, or the Pyrenees, during existing circumstances. It is not found in the Scandinavian peninsula, so that we cannot suppose it to have come from thence; it is clear, therefore, that there must have been a very different condition, both of England and the continent, from the present, in the days when it migrated to this distant spot. The only probable time of its coming could be during this reign of ice, and it still remains as much a witness to the truth of this period as the glacier furrows left on the rocks themselves. A careful summary of the geographical distribution of our Alpine and sub-Alpine insects, both at home and on the continent, would give us juster ideas as to what species may with certainty

be referred to as remnants of this age. The absence of some, such as *Parnassius Apollo*, for example, is as notable as the presence of others. Curiously enough, there is not a single *butterfly* common to the British Isles and Iceland, though there seems no reason why *Colias Palæno* and *C. Phiconome*, at least, should not be found with us. The genus *Chionobas* has reached America from Europe evidently by this path, since *Chionobas Jutta* has occurred in the neighbourhood of Quebec, from whence I have received specimens: it is still an Icelandic insect, as also an inhabitant of the Scandinavian promontory. *Crymodes exulis* and *Plutella Dalella* are indeed common to Iceland and the British Isles, but the latter occurs also on the mainland of the continent. There is one plant, *Arenaria norvegica*, which is, I believe, not met with on the continent, and yet is found at Unst, in Shetland, but as far as the *Lepidoptera* are concerned there is no evidence of any Scandinavian migration; the names of some beetles, such as *Dytiscus lapponicus*, would seem to indicate otherwise; whether this be a fact I must leave, however, to the coleopterists.*

The absence of *Erebix* from the Welsh mountains must have some significance,—though it is difficult to say what.

2. *Migrants of a warmer epoch subsequent to the glacial period.*

Our Islands, bathed by the gulf-stream, on the western side especially, have winters far less severe than those of the northern half of central Europe; insects will therefore live with us which cannot bear the cold of these sterner seasons, yet for them to have reached us by migration must have required a time of more general warmth than the present.

Examples amongst the larger *Lepidoptera* of this group are rare, yet *Lithosia caniola* and *Tapinostola Bondii* may be quoted as marked instances; perhaps *Phlogophora empyrea*, and *Plusia N.*, may also belong to this category; amongst the lesser *Lepidoptera*, *Dasycera sulphurella*, *Elachista rufo-cinerea*, and *Lithocolletis messaniella*, give us good illustrations. It must be remembered that it does not follow that at this period of migration all the insects which came to England were of this delicate constitution, contemporaneously with them many of our more hardy insects came. The excellent paper by Mr. Barrett, in the February number of this magazine, on the entomology of Brandon, shows that here we have, as it were, a leaf out of an old black-letter book still preserved for us, and that we can read in it what the inhabitants of a sandy coast on the eastern shore of England then were; some like those

* *D. lapponicus*, recorded here from Inverness-shire, the Island of Mull, and Donegal, is found in Lapland, Sweden, Siberia, the Ost-sea coast of North Germany (Eutin, Stettin), and Berlin; also in the extreme south-east of France (Dep. of Basses Alpes, Barcelonnette and Col de Lauterrier).—E. C. R.

we have at present, others now peculiar to that district only ; that this warmer period lasted for a time long after this is shewn, as instanced in that paper by specimens of a fresh-water shell, now found in the Nile only, being common in a semi-fossilized condition in land that was *then*, without doubt, covered by the sea.

Examples of this group of migrants are indicated by an asterisk in Stainton's "Tineina of Southern Europe," wherein are thus summed up the reasons of their peculiar distribution : "I believe most of these are "species which require to feed up as larvæ during the winter, and cannot stand the prolonged severe cold of continental Europe." Surely all this group must have been sadly thinned by the past season !

3. *Direct migrants.*

The junction of England to the continent was probably on the eastern side, where the North Sea now rolls ; and, if the water drainings of Europe were conducted upon anything like its present plan, the British Channel must have been a vast estuary, leading to the mouth of the Rhine. Whilst England was thus part of the continent, there must have been a constant, steady migration, from the German side, of all the insects fitted to live in our island ; to these I have given the name of "direct migrants," and they constitute the large bulk of our *Lepidoptera*. A very happy illustration of each of the three classes here described is given in one genus of another order ; *Cordulia aenea* is a direct migrant, *Cordulia arctica* is an Alpine insect belonging to the glacial period, whilst *Cordulia Curtisi* affords a good example of a southern form, yet existing in the New Forest.

The insects of Ireland have, so to speak, been filtered through Scotland before reaching the Emerald Isle, the same applies also to the Isle of Man, yet this does not explain all the peculiarities of these two localities : a careful examination of the *Lepidoptera* of the Mull of Galloway, with a view to comparison, has not been made,—that is, at least, as far as is known to me.

4. *Western migrants.*

This group is doubtful ; yet, from analogies in the distribution of plants, it is extremely probable that such exists. In plants there are many, the occurrence of which in England we can scarcely explain on any other theory. The distribution of *Pinguicula lusitanica*, *Erica mediterranea*, *Ononis reclinata*, and many others, almost requires such a supposition. The very presence of such plants as *Erica cinerea* and *Agrophis nutans*, so rare in Germany, is suggestive of such a western migration ; on the other hand, it is fair to confess that in Connemara we find *Naia*

flexilis, a plant whose most noted continental locality is near Stettin. A western migration amongst insects is also rendered probable by the distribution of some species, such as *Trochilium philanthiforme* and *Polia nigrocineta*; but a careful comparison of the insects of Galicia, Brittany, Cornwall, and the Isle of Man, is yet to be made.

The question is here brought prominently before us as to whether there was ever any direct junction between our islands and the continent of America. The *Lepidoptera* of the two localities give us no proof of this; true, there are many insects common to England and America, but none that are peculiar to the two. With regard to *Chionobas Jutta* (and if *Colias Hecla* and *Colias Boothii* be the same, in its case also), we can say this insect must have reached America through Iceland; but this is not the case with any British insect; on the contrary, the presence of *Vanessa Antiopa*, with *Pieris Protodice*, so closely allied to *Pieris Daplidice*, *Libythea Bachmanni*, and *Deilephila Chamænerii*, *Libythea Celtis*, and *Deilephila galii*, seems to point to a place of junction decidedly to the south of our islands. Such a union would block up all passage between the northern and southern portions of the Atlantic, and there would be no possible gulf-stream on our western coasts: this might be, therefore, the very cause of the glacial period, and it must have been co-existent with it,—at all events the union could not have been at a later epoch.

It seems most probable, on a careful examination of the facts, that there has been a western migration of insects as well as plants, but that further investigation on this point is needed; we have no right, however, to expect to find our western insects in America. The *Lepidoptera* common to the two continents can all be accounted for by a more southern junction. This migration was, as said before, probably at or before the glacial period; and it is remarkable how little change has happened to the insects considering the immense lapse of time and the change of climate. The uniform tendency of that change in many cases is, however, worthy of note; thus, *Vanessa Antiopa*, *Vanessa cardui*, and *Melanippe hastata* are all darker than in Europe; this change is more marked in *Deilephila Chamænerii* and *D. galii*, *Phlogophora Iris* and *P. meticulosa*, and it becomes still more decided in *Vanessa Milberti* as compared with *V. urticae*, *V. J.-album* and *V. polychloros*, *Thanaos brizæ* and *Thanaos Tages*. Who, on seeing this, can risk the belief that these so-called representative species are in reality climatic varieties? Truth compels us to state that this change is not always constant; thus *Lycæna phlæas*, *Deilephila lineata*, *Scoliopteryx libatrix*, and *Eucosmia undulata* seem to have undergone no variation from the same species

in Europe, and *Smerinthus cæcimakulatus* differs little from our *Smerinthus ocellatus*, saving that the upper wings are crenate at the hind margin as in *S. populi*.

This, however, is a digression from the main subject of our paper; yet, before quitting it entirely, it may be as well for us to bear in mind that it is a pure assumption to state that the migration was from Europe to America, there may have been an endosmose into Europe, as well as an exosmose from it.

5. *The fifth group, Autochthones*, insects peculiar to our islands, is of course full of interest, yet they are few, and present no special characters.

Amongst the diurnal *Lepidoptera*, *Polyommatus Artaxerxes* is our only example, and this is regarded by most as a northern variety of *Agestis*,—which, indeed, the intermediate *Salmacis* seems to indicate: yet that such a remarkable variety should be found in Scotland only, whilst the usual type occurs in Sweden, Norway, and Northern Prussia, is a fact quite as strange and worthy of note as if it were a fixed species. The dark forms of *Melitæa Artemis* are, as far as I can discover, also unknown on the continent, but I have never seen Scandinavian specimens.

Amongst the *Nocturni* there are two peculiar to our islands, *Lithosia sericea* and *Lithosia griseola*, var. *stramineola*. *Lithosia sericea*, very limited in its distribution in England, has not long been remarked as a distinct species, and may possibly have been overlooked. The variety *stramineola* is not, like *Artaxerxes*, in any way climatic, since it occurs alike in Devonshire and in the fens of Norfolk: it is, indeed, one of those strange variations in which an aberrant form of a species belonging to one group somewhat approaches another group of the same genus.

Amongst the *Geometræ* there is no species peculiar to the British Isles, and the same may be said of the *Pseudo-bombycidæ* and *Drepanulæ*.

Agrotis Ashworthii seems unknown on the continent; it is a western species, and may be yet found in Spain. It is a species of much interest, confined to a little tract in Wales, the larva differing much from that of its nearest British ally, *Agrotis lucerneæ*, from which it is widely distinct.

Noctua subrosea is doubtful, as it has been taken in Russia. It is now very rare in England, and perhaps may soon be extinct.

Dianthæcia Barrettii: the discovery of a peculiar British *Dianthæcia* in Ireland and the Isle of Man, which for some reason or other unknown

to us seems to be a focus of this genus, is most remarkable, and the peculiar varieties of *conspersa* found in Devon add in no small degree to the interest. If *capsophila* be only a variety, and not a species, it is none the less peculiar to our islands.

Amongst the *Deltoides* and *Pyralides* there is no peculiar species.

Amongst the *Crambites* there are several, but none probably really peculiar, as they are *Scopariæ* and *Phycitæ*, insects which have been little attended to, and are very likely to have been passed over.

Among *Tortrices*, *Argyrolepiæ æneana*, though figured by Hübner, is not now known to occur on the continent.

In the *Tineina* it is probable that there is no species peculiar to England, though many in the genera *Gelechia*, *Coleophora*, and *Elachista* have as yet never been taken elsewhere.

Amongst the *Pterophori*, *Oxyptilus teucarii* is as yet only known as British.

These genuinely British insects must always have a peculiar interest, and therefore I have attempted to construct a table of them; every one who looks upon it without prejudice, must feel that the greater part are likely to be found elsewhere, when the whole of Europe is explored.

List of *Lepidoptera* as yet only taken in Great Britain:—

Polyommatus Artaxerxes.	Micropteryx salopiella.
Lithosia sericea.	Gelechia celerella.
„ griseola, var. stramineola.	„ divisella.
Agrotis Ashworthii.	„ fumatella.
Dianthœcia Barrettii.	„ politella.
„ capsophila (var.)	„ ocellatella.
Scoparia atomalis.	„ fraternella.
„ basistrigalis.	„ lathyrella.
„ ulmella.	„ tarquiniella.
„ gracilalis (doubtful).	„ immaculatella.
Trachonitis Pryerella.	„ Sircomella.
Homœosoma senecionis.	Æcophora Woodiella.
„ saxicola.	Glyphipteryx cladiella.
Melissoblaptēs cephalonica.	„ schœnicolella.
Coccyx vernana.	Argyresthia purpurascens.
Dicrorampha flavidorsana.	Ornix devoniella.
Eupœcilia Degreyana.	„ Loganella.
„ albicapitana.	Coleophora genistæ.
Argyrolepiæ æneana (doubtful).	„ inflatæ.
Incurvaria tenuicornis.	„ albicosta.

Elachista Megerlella.	Lithocolletis ulicicolella.
„ Gregsoni.	„ caledoniella.
„ subnigrella.	Cemiostoma lathyrifoliella.
Lithocolletis viminiella.	Nepticula poterii.
„ nigrescentella.	„ atricollis.
„ irradiella.	Oxyptilus teucarii.
„ triguttella.	

It is not supposed that these are all peculiar to our islands. *Meliasoblaptēs cephalonica* is, of course, only an accidental importation and not British at all; but it is important to have as complete a list as possible, and then it becomes easy to register any additions, or, more probably, any elisions, which time renders necessary. Yet even now it is not going too far to say that our isles present no focus or centre for any peculiar group of *Lepidoptera*.

6 *Naturalized species.*

In a country like England, where civilization has been the growth of centuries, and from which the mainland of Europe is so easily reached, it is now utterly impossible to estimate with truth what the effects of naturalization may have been: when we find our social insects as they may be termed, so rapidly acclimatized in America with a distance of eleven days between us, how much the more must the same be expected with a distance of not nearly as many hours from the continent! *Pieris rapæ*, *Sesia tipuliformis*, and *Semasia pomonella* have now a firm home across the Atlantic, and *tipuliformis* has even found a lodging in the Antipodes. In our own days, *Dreissena polymorpha* amongst Molluscs, *Cynips Kollari* amongst insects, and *Anacharis alsin-astrum* amongst plants, have so naturalized themselves in our island, that it would be utterly impossible to eradicate them. Of these examples, *Cynips Kollari* is to me of special interest: although noticed by me in Devon, certainly for forty years at the least (since we used its galls for marbles when I was quite a child), yet it did not reach Birmingham until 1860, when it was first noticed by me in the town, a fact not to be wondered at, considering how often its galls were brought from the south by tourists; it was not, however, until the autumn of 1866 that it was first seen by me invading Birmingham, along the hedges on the Worcestershire side; the two streams have since met, and *C. Kollari* is to be found both in town and country. It is not impossible that *Pieris rapæ* and *P. brassicæ* may have come in with the pot-herbs of the old Romans, for we know not what human agency may have done in the lapse of centuries; yet, as naturalization affects almost entirely such insects as haunt the neighbourhood of man, it scarcely touches the general conclusions at which we have arrived.

The few stragglers, as for example, *Lycæna bætica*, which may be borne by winds across the narrow separating channel, can hardly be called English; a few species may, however, have taken root when transplanted in this chance way: such, however, must be a rare event, the males in most cases being, of necessity, wafted across rather than the female.

All our native insects can probably be grouped under one or other of these divisions; but there is, in conclusion, another point which will obtrude itself upon our notice, namely—Are we to expect any further changes in our lists, besides those brought by fresh discovery? Will the *Lepidoptera* of the year 2000 be the same as those of 1871? To answer this we must look back:—since our own days, *Lycæna Aois*, *C. ysophanus dispar*, and *Deilephila euphorbiæ* have nearly disappeared from our island; for the scarcity of the first of these we can give no reason; the second, a very local species, seems to have been exterminated by the over zeal of entomologists (a zeal that will probably destroy *Lycæna Arion* also), aided by an unusual flood; *Deilephila euphorbiæ*, like *Pieris Daplidice*, had a doubtful hold upon our island, as on the very verge of its northern range, just, indeed, as one of the *Euphorbiæ*, *E. peplis*, which still lingers as if loth quite to depart from the sands of Cornwall. Probably the lapse of time may destroy a few of these species, some of the very local insects may be lost by zeal, cultivation, or drainage, and we shall gain a few American or continental species, such as, perhaps, *Pempelia grossulariæ* or *Anchylopera fragariæ*, insects of a domestic type feeding on plants either of the kitchen or flower garden. The changes will probably be few, and it is consoling to think that the Lepidopterists of a future century will still be able to refer with satisfaction and profit to Doubleday's list and Stainton's Manual.

Birmingham: June, 1871.

OBSERVATIONS ON THE EGGS OF *VANESSA URTICÆ* AND *POLYCHLOROS*,
WITH REGARD TO SEPP'S FIGURES.

BY THE REV. J. HELLINS, M.A.

Except, perchance, in the way of recording varieties, I did not, until lately, suppose there was much left to be said about these butterflies; they had surely been *done* long ago! But, chancing to read in a recent publication the curious and striking *fiction* that the *pear-shaped*, *smooth egg* of *polychloros* is very different from that of *urticæ*, I began to fancy there was yet room for a few words to set things right. So

far as I can discover, a mistake made in one of Sepp's plates 109 years ago, has been accepted without question, and reproduced in various forms up to the present date ; at least, he gives figures which correspond exactly to modern descriptions, and one could not resist the conclusion that it was found easier to copy, than to make original research. But, being unwilling to depend on memory alone, I waited till this spring to get eggs of both species ; and in this I have succeeded, not without trouble, for common things somehow grow rare just when you want them, and, in fact, I should have failed, had I not been helped by correspondents, whose names are wont to appear in these pages at the end of more important announcements than the capture of large or small "tortoise-shells !"

Polychloros I found on the wing throughout April, but I could not induce the female to lay in confinement, and was therefore obliged to squeeze the eggs from them after death ; this circumstance prevents me from speaking with certainty as to their colour, but not as to their form, which is like that of a short, squat barrel, but ribbed with eight or nine longitudinal even ridges, which extend over the flattened top, but appear to cease on reaching the base ; the space between the ribs is transversely fluted, but much more finely than in the egg of *urticæ*, although the latter is not half the size ; the colour apparently is a dull green. The whole batch of eggs appears, from a specimen kindly furnished to me by Mr. Harwood, to be deposited much after the style of *Olioiocampa neustria*, in close, regular order on a twig of elm, aspen, &c.

Urticæ I saw first in March, but after that I saw no more till near the end of May, though since then I have occasionally sighted one or two up to the beginning of July ; the females made no difficulty in depositing their burden in an *irregular mass* on the *under-side* of *nettle leaves* ; the egg is somewhat pouch-shaped, being oblong and fuller at the base than above ; the base is not flattened, but rounded and smooth, and just where it slopes into the sides the ribs (seven, eight, or nine in number), commence ; these continue over the top for about half its diameter, and increase in prominence as the egg itself diminishes, until at last they quite stand out like clear glass beading ; the space between the ribs is boldly fluted ; the colour is a pale yellowish-green.

The egg figured by Sepp for *urticæ* is doubtless that of *polychloros* ; whilst that figured by him for *polychloros* I can refer to no form with which I am myself acquainted ; I can only *guess* that it represents a somewhat shrivelled egg of *urticæ*, and that perhaps his microscope was to be found fault with more than himself ; for, certainly, the majority of his figures have not been surpassed for accuracy up to the present time.

Exeter : July 7th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 6).

BY H. W. BATES, F. Z. S.

Genus LACHNOPHORUS, Dej.

LACHNOPHORUS LÆTUS, n. sp.—*L. eleganti* (Brullé) *affinis*; *capite et thorace rufis, hoc basi olivaceo-æneo*; *elytris olivaceo-æneis, marginibus, macula elongata humerali, et triente apicali, flavo-testaceis*; *antennis pedibusque flavo-testaceis, illis apice paululum obscurioribus*; *corpore subtus nigro-æneo, thorace lateribus abdomineque apice rufo-testaceis*; *capite latitudine thoraci æquali, oculis prominentibus*; *thorace cordato, sub-nitido, subtilissime rugoso-punctulato, elytris capite thoraceque conjunctis duplo longioribus, amplis, creberrime granulatis, punctato-striatis, apice obtuse rotundatis*; *corpore toto flavo pubescenti.*
 Long. 4 lin. 1 exempl.

The pale marks of the elytra (which, however, are doubtless variable) consist of a lateral border, entire from the middle of the base to the apex, but enlarged at the shoulders, into an elongate spot occupying four or more interstices, contracted in the middle into a marginal line, and expanding at the apex into a spot occupying nearly a third of the elytron; this apical spot is dusky in the middle and dentated on its anterior edge. The elytra have no large punctures or foveæ. The species much resembles *Anchonoderus concinnus*, of Reiche, differing chiefly in colours.

Banks of R. Tapajos.

LACHNOPHORUS ÆNEICOLLIS, n. sp.—*L. læto proxime affinis, differt solum capite thoraceque viridi-æneis nitidis, hoc marginibus anguste, illo epistomate et partibus oris, flavo-testaceis*; *antennis pedibusque flavo-testaceis*; *elytris amplis, quadrato-ovatis, æneis, marginibus pallidis, pone humeros dilatatis fasciamque brevem interdum formantibus, apud apicem in maculam magnam, medio infuscatam, expansis.*
 Long. 3½ lin. ♂ ♀. 6 exempl.

The head and thorax are very finely punctured, and the elytra densely granulated as in *L. lætus*. The thorax is very small compared with the bulk of the body, and is more dilated in front and contracted behind than in *L. lætus*.

St. Paulo and Ega, Upper Amazons, in moist places at edge of the river, under detritus, abundant, and offering no variety tending to connect it with *L. lætus*. Coll. Ed. Brown, Bates, and others.

L. ELEGANS, Brullé, Voyage de d'Orbigny, Ins. p. 25, pl. iii, f. 3.
 —Bolivia interior.

L. CONCINNUS, Reiche, Revue Zool. 1843, p. 39.—Equador.

L. (?) APICALIS, Id., New Granada.

LACHNOPHORUS QUADRINUS, n. sp.—*Cupreo-fuscus, nitidus, passim grosse punctatus breviterque pubescens*; *capite latitudine thoraci vix æquali*

grossissime punctato, fronte lævi, utrinque late sulcata, juxta sulcum carinata; thorace lato, antice valde rotundato, postice fortiter constricto, supra grosse punctato, medio canaliculato; elytris distincte punctatis, punctulato-striatis, utrinque tri-foveatis, maculisque duabus latis, rufo-testaceis (quarum una curvata humeralis, altera obliqua sub-marginalis prope apicem) ornatis; antennis, partibus oris, pedibusque rufo-testaceis, femoribus pallidioribus; corpore subtus nigro, punctato. Long. $2\frac{3}{4}$ —3 lin.

Rio Janeiro, Bahia. Apparently not uncommon. In my own collection and that of Mr. Grut.

LACHNOPHORUS QUADRINOTATUS, n. sp.—*Nigro-cæneus, pubescens, capite distincte parce punctato, nitido, antennarum articulis 4 basalibus pedibusque flavo-testaceis, his geniculis tibiarum tarsorumque apicibus obscurioribus; thorace capiti latitudine sub-æquali, cordato, subtiliter parce punctulato et medio transversim leviter plicato; elytris oblongo-ovatis, striis basin versus grosse punctatis, interstitiis punctulatis, absque foveis; utrinque maculis duabus rufo-testaceis (quarum una elongata prope humerum, interstitia 6—7 vel 6—8, altera multo brevior prope apicem, interstitia 6—8, occupans) ornatis; palpis piceis.* Long. 2 lin.

Agrees with *L. submaculatus* in form of body, but differs in the light colour of the legs and in the absence of foveæ from the elytra; the interstices are very distinctly punctulated, and the anterior elytral spot is placed close to the shoulder, instead of near the disc, at one-fourth the elytral length, as in *L. foveatus* and *L. submaculatus*.

Rio Janeiro. Taken by Mr. Squires and Rev. H. Clark. In my own collection and that of Mr. Grut.

LACHNOPHORUS FOVEATUS, n. sp.—*Fusco-cupreus, sub-nitidus, dense fusco pubescens; capite thoraceque latitudine æqualibus, subtiliter creberrime punctulato-rugosis; hoc alutaceo, cordato, antice modice rotundato-dilatato; elytris amplis, sub-quadratis, profunde striatis, striis grosse punctatis, interstitiis sub-rugosis, plicatis, haud distincte punctatis, utrinque foveis magnis tribus, fasciisque duabus brevibus curvatis, rufo-testaceis (quarum una ab humero distans e maculis 4—5 parvis, altera discoidalis posterior e maculis 3—4 formata) notatis; antennarum articulis 4 basalibus femoribusque rufo-testaceis, palpis tibiis et tarsis piceis.* Long. $2\frac{1}{4}$ —3 lin. ♂ ♀. 10 exempl.

Distinguished from *L. quadrimus* by the great difference in its punctuation, and by the reddish spots of the elytra, which, instead of being broad, short, streaks, consist only of a number of small spots on adjoining interstices: the striæ near the suture are very deeply impressed. *L. impressus*, Brullé, is described as without elytral spots; in none of my specimens of *L. foveatus* are the spots wanting, otherwise his description agrees pretty well with my insect.

Upper Amazons. Abundant.

LACHNOPHORUS TIBIALIS, n. sp.—*Fusco-cupreus, sub-nitidus*; capite thoraceque latitudine æqualibus, illo distincte passim, hoc subtilissime leviter, punctulato, rugoso, nitido, antice dilatato-rotundato; elytris quadrato-ovatis, punctato-striatis, interstitiis punctulatis, leviter plicatis; utrinque foveolis 3 parvis et fasciis duabus brevibus rufo-testaceis e maculis formatis, interdum indistinctis; antennis nigris, articulis 4 basalibus rufo-piceis, palpis piceis, pedibus fusco-piceis, tibiis (apice excepto) flavo-testaceis.

Long. $2\frac{1}{2}$ lin. Exempl. plurima.

Closely allied to *L. foveatus*, presenting scarcely any difference in the elytra, but the thorax is not alutaceous and sub-opaque as in that species, and the legs are of a different colour.

St. Paulo & Pebas, Upper Amazons. In my own collection and that of Mr. Ed. Brown.

LACHNOPHORUS SUBMACULATUS, n. sp.—*Angustior, obscure nigro-æneus, hirsutus, antennarum articulis 4 basalibus, palpis, pedibusque piceo-testaceis, tibiis apice tarsisque obscurioribus*; capite parce haud profunde punctato, nitido; thorace antice modice rotundato-dilatato, postice haud abrupte constricto, supra leviter ruguloso, nitido; elytris oblongo-ovatis, fortiter striatis, striis basin versus grosse punctatis, interstitiis punctulato-plicatis, utrinque tri-foveatis, maculisque duabus parvis rufo-testaceis (quarum una anterior interdum deficiens, interstitia 6—8, altera posterior 5—7, occupans) notatis.

Long. $1\frac{3}{4}$ — $2\frac{1}{2}$ lin. 12 exempl.

The most common and generally distributed species throughout the Amazons region, in moist, muddy places. It is likely to be the same as Gory's *bipunctatus*, if we may assume the description of that author to be inaccurate in several essential points. According to that description, the legs would be black and the three basal joints only of the antennæ reddish; but in none of my specimens is there any approach to blackness in the colour of the legs; they are always (trochanters included) of a pallid-brown hue or reddish testaceous with the base and apex of tibiæ slightly darker. The small anterior pale spot of elytra might readily be overlooked, as it is often reduced to two specks on adjoining interstices, and in one of my specimens disappears altogether.

It is just possible that this may be the *Anchoderus* (sic) *submaculatus*, Motsch., Bull. Mosc., 1864, p. 334.

LACHNOPHORUS OCHROPUS, n. sp.—*L. sub-maculato proxime affinis, differt pedibus clare flavo-testaceis, &c.: nigro-æneus, pubescens*; capite thoraceque latitudine sub-æqualibus, sub-crebre punctatis, hoc ruguloso sed nitido, cordato; antennarum articulis, præter 4 basales flavo-testaceos, rufo-piceis; palpis flavo-testaceis; elytris oblongo-ovatis, striis (apice excepto) grosse punctatis, interstitiis punctulatis, utrinque tri-foveatis, maculisque duabus brevibus, rufo-

testaceis (quarum una anterior, discoidalis, interstitia 5—8,—interdum multo minor,—altera discoidalis prope apicem interstitia 5—7 occupans) ornatis.

Long. 2 lin. 4 exempl.

Ega and St. Paulo, Upper Amazons.

LACHNOPHORUS LÆVICOLLIS, Reiche, Rev. Zool., 1843, p. 180. This small species, distinguished by its impunctate head and thorax and spotless elytra, seem to have a wide distribution in South America. Specimens in my collection from St. Catharine and Rio Janeiro in South Brazil, and from Ega, perfectly agree with Reiche's description of New Granada examples. I suspect *L. niger* of Gory (from Cayenne) to be the same species; but, from the well-known and never failing inaccuracy of this author's descriptions, no definite conclusion can be drawn regarding it; he mentions, however, the head as punctured, whereas in *L. lævicollis* it is quite smooth. There are specimens from Cayenne in Mr. Brown's collection, which agree precisely with Gory's description, except that the elytra have on each side a row of large foveæ, a feature that may have been omitted by the describer.

LACHNOPHORUS PICTIPENNIS (Chevr. M.S.), n. sp.—*Gracilis, nigro-æneus, pubescens; antennarum articulis 4 basalibus (cæteris piceis) palpis pedibusque pallido-testaceis, geniculis fuscis; capite punctato-scabroso, opaco; thorace capite angustiori, graciliter cordato, minus dense punctato, sub-nitido, utrinque sulco lato sub-marginali; elytris oblongis, striis exterioribus basin versus grosse crenato-punctatis, interstitiis confuse punctulatis, utrinque tri-foveatis, dimidio basali et sutura fere usque ad apicem testaceo-rufis, macula laterali post medium nigra, postice fascia maculari albida marginata, apice flavo-testaceis; abdomine apice rufescenti.* *Long. 2 lin.*

Mexico, from M. A. Boucard's collection. The punctuation of the elytral interstices is not in a single distinct row as in *L. elegantulus*, but fine and confused. The lateral sulcus of the thorax, besides colouration, &c., is a good distinguishing character. In my own collection and that of Mr. Edwin Brown.

LACHNOPHORUS TESSELLATUS, Motschulsky, Bull. Mosc., 1863, 221 (*Stigmaphorus, id.*). An ill-described species, apparently distinct; found at Panama.

LACHNOPHORUS TENUICOLLIS, Dej., Species Gen., v., p. 100.

Dejean failed to notice that this species, described by him as a *Bembidium*, belonged to his own genus *Lachnophorus*. It is closely allied to *L. pictipennis*, but wants the lateral sulcus to the pronotum. The elytra are pale fulvo-testaceous, shining, with an indistinct dusky fascia behind the middle, preceded and followed by white spots. It is found in the most southerly provinces of Brazil. In my own collection and that of Mr. Edw. Brown.

LACHNOPHORUS MACROSPILUS, n. sp.—*Gracilior, saturate-æneus, flavo-pubescentis; capite passim crebre punctato, antennarum articulis 4 basalibus palpis pedibusque clare fulvo-testaceis; thorace capite paulo angustiori, cordato, postice gradatim angustato, crebre punctato, sub-ruguloso, sub-nitido, linea laterali utrinque elongata impresso; elytris elongato-ovatis, striis (apice exceptis) fortiter punctatis, interstitiis rugulosis, utrinque tri-foveatis, maculis magnis duabus, testaceo-fulvis (quarum una prope basin rotundata, interstitia 2—8, altera sub-apicalis, fasciam curvatam formans, interstitia 1—8 occupans) ornatis.* Long. $2\frac{1}{2}$ lin. 6 exempl.

The anterior elytral spot is very large, occupying nearly a third of the surface of each elytron.

St. Paulo, Upper Amazons. In my own collection and that of Mr. Grut.

LACHNOPHORUS ORNATUS, n. sp.—*Gracilis, saturate viridi-æneus, flavo-pubescentis; capite thorace latiori, crebre rugoso-punctato; thorace anguste cordato, convexo, crebre transversim ruguloso; elytris elongato-ovatis, striis (apice excepto) grosse punctatis, interstitiis uniseriatim distincte punctatis et plicatis, utrinque tri-foveatis, maculaque magna laterali ab humeris distante, et apice late flavis; antennis, palpis, pedibusque testaceo flavis.*

Long. $2\frac{1}{2}$ lin. 6 exempl.

A very distinct and handsome species; the anterior elytral spot extends from the 5th to 9th interstices, and is elongated only on the 7th and 8th, the lateral margin exterior to this is white nearly to the shoulder, and again exterior to the apical patch. The elytra are different in form from the other species, the base being oblique instead of straight between the thorax and shoulders.

St. Paulo, Upper Amazons. In my own collection and that of Mr. Grut.

Kentish Town: July, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA

BY CHRISTOPHER WARD.

(Continued from page 36).

PIERIS RHODANUS, n. s.

♂. *Upper-side*: both wings clear white; fore-wing bordered on the outer margin with black, broad at the apex, rather broken towards the anal angle; hind-wing, on the outer margin seven distinct black spots, which are rather pointed on the inner side, the uppermost and lowest the smallest.

Under-side: fore-wing clear white with apex tinged with light yellow, on the margin at the end of each nervule a small black spot, the three lower ones having joining them on the inner-side a larger spot, base marked with orange; hind-wing, cream-white, the costa edged with orange, hind margin with seven black spots on the nervules, the three upper the smallest.

- ♀. **Resembles the male**, but on the upper-side the base of fore-wing is bright orange, the black at the apex is mingled with grey; on the under-side the base of both wings is more strongly marked with orange, and the black spots round the hind margin are larger and rounder.

Expanse 2 inches.

Habitat: Camaroons.

Allied to *Pieris Eudoxia*.

PIERIS CEBRON, n. s.

- ♂. *Upper-side*: yellowish-white; fore-wing, anterior and hind margin edged with black, base yellow, which is narrowly continued to centre of anterior margin; hind-wing, inner margin broadly marked with yellow, also narrowing round the hind margin, which is bordered with black, broken towards the anal angle into longitudinal spots.

Under-side: fore-wing white, base and apex yellow, outer margin edged with black spots; hind-wing, yellow, outer margin with seven distinct black spots.

Expanse $2\frac{3}{5}$ inches.

Habitat: Camaroons.

PIERIS CAPRICORNUS, n. s.

- ♂. *Upper-side*: fore-wing, white, apex black, narrowing down the posterior margin; hind-wing, white, the margin with a small, black spot at the end of each nervule, the three upper and the lowest the smallest.

Under-side: white, base of fore-wing slightly marked with orange, costa of hind-wing more strongly marked; outer margin of fore-wing with small, black spots at the end of each nervule.

- ♀. *Upper-side*: yellowish-white: fore-wing, outer margin broadly marked with greyish-black, the cell and inner margin greyish-black; hind-wing, more tinged with yellow, outer margin bordered with seven large, black spots, the three upper running into each other; within, a second band of six black spots.

Under-side: white; fore-wing, the costa edged with orange, a large, black spot in centre of wing, with a smaller one placed above and below it; outer margin of both wings tinged with yellow and edged with black spots; on the hind-wing a second inner band of black spots, which are edged with yellow on the inner side.

Expanse $2\frac{1}{2}$ inches.

Habitat: Camaroons.

In some specimens the colour of the fore-wing of the female, on the upper-side, is a bright orange. The female described was taken in copula.

ERONIA VERULANUS, n. s.

- ♂. *Upper-side*: bluish-white; fore-wing, outer margin and apex broadly marked with black; hind-wing, outer margin with six small, black spots.

Under-side: both wings clear lustrous white.

- ♀. *Upper-side*: fore-wing, yellow, outer margin broadly marked with black, containing two yellow spots near the apex; hind-wing, white, edged with seven triangular, black spots.

Under-side: fore-wing, yellow, the apex and outer margin white, with three large, black spots on the inner side; hind-wing, clear lustrous-white.

Expanse, ♂, $2\frac{1}{8}$ in.; ♀, $2\frac{3}{8}$ in.

Habitat: Camaroons.

Allied to *Eronia Thalassina*.

ACRÆA PENTAPOLIS, n. s.

Both wings transparent, nervures light brown; fore-wing, upper-side with two narrow bands of light brown, crossing diagonally outwards, one through the cell, one beyond it, outer margin bordered with same color.

Hind-wing: outer margin broadly marked with light brown, near the base four spots of dark brown, below the cell a larger spot placed between each nervule.

Under-side resembles upper-side.

Expanse 3 inches.

Habitat: Camaroons.

A very high flyer.

ACRÆA PENELEOS, n. s.

Upper-side: fore-wing, transparent; nervures, apex, outer and inner margin broadly marked with brown, two red spots near the anal angle; hind-wing, clear, bright red, bordered on the outer margin with dark brown; base, brown, with numerous black spots.

Under-side: fore-wing, apex and outer margin broadly marked with light brown; hind-wing lighter brown, base with numerous black spots, outer margin bordered with darker brown.

Expanse 2½ inches.

Habitat: Camaroons. Old Calabar.

[To be continued.]

BRITISH HEMIPTERA. ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

(Concluded from page 29).

Section.—ANTHOCORINA.

Family.—MICROPHYSIDÆ.

Genus.—PSEUDOPHLEPS, n. g.

♂. *Head* broad, short, convex; *face* slightly narrowed in front, central lobe somewhat narrow and elongate, in front obtuse; side-lobes narrow, triangular, distinctly shorter than the central one. *Antennæ* stoutish, first joint reaching to the end of the face, second slightly clavate, more than twice the length of the first, third and fourth sub-equal, the former thinner than the latter, and the bases of both slender. *Eyes* moderately large and prominent; *rostrum* stout, curved, reaching to the first pair of coxæ.

Thorax: *pronotum* convex, broader than long, trapeziform; anterior margin constricted into a narrow collar, posterior margin concave. *Scutellum* short, triangular, almost equilateral, the base convex transversely. *Elytra* longer than the abdomen; *clavus* somewhat broad, widest across in a line with the scutellar angle; *corium*, anterior margin convex before its junction with the cuneus, where

it is somewhat contracted; *embolium* long, concave; *cuneus* narrower at the base than the anterior margin of the corium; *Membrans* somewhat broad, base in the middle with a Y-shaped cell, from which proceed three short, indistinct, pustulated nerves. *Legs* long, thin; *thighs* cylindrical; tibiae slightly thickened at the apex, third pair somewhat bent; *tarsi* slender.

Species 1.—PSEUDOPHLEPS INCONSPICUUS, n. sp.

♂ Black; dull.

Head shining. *Face*: apex of the central lobe reddish. *Antennæ*: apex of the second joint narrowly reddish; *ocelli* red; *rostrum* pitchy-black.

Thorax: *pronotum* shining, in the middle with a deep transverse incision, beyond which the disc is flattened and faintly wrinkled transversely. *Elytra*: *clavus* and *corium* brown-black, anterior margin of the latter black; *cuneus* reddish-brown, base brown-black; *membrane* fuscous, iridescent, basal cell-nerves black; the short, pustulate, longitudinal nerves, and a narrow triangular patch below the apex of the cuneus, whitish; *legs* dark brown-black.

Abdomen reddish above, underneath darker.

Length $\frac{7}{8}$ line.

Smaller and narrower than *Myrmedobia coleoprata*, to which it is allied, and with shorter and stouter antennæ than that species; the shape of the basal cell of the membrane and the almost obsolete nerves also prove its distinctness.

The description has been drawn up from two ♂ specimens, not in good order, in the collection of Mr. E. Saunders, taken by Mr. Crotch some years ago at Weymouth, under seaweed. No doubt this was either accidental, or the seaweed had been taken possession of by a colony of ants with whom they were living.

Corrections in Synonymy.

SCUTATINA.

EURYGASTER NIGER.

Tetyra nigra, Fab., S.R. 136, 39. *T. maura*, Fab. (pars) S. R. 136, 36. *Eurygaster hottentottus*, Fieb., D. and S. (nec Fab.). *E. niger*, Stål, Hem. Fab. i, 12, 3.

STRACHIA FESTIVA.

Oimes festiva, Lin.

Strachia ornata, Flor, D. and S. (excl. syn. of *S. ornata*).

PODISUS, H.-Schf., Fieb., Stål=ASOPUS (*luridus*), Fieb., D. and S. (nec Burm.).

PIEZODORUS LITURATUS.

Oimes lituratus, Fab. E.S. iv, 114, 34, S.R. 170, 84. *Piezodorus De Geeri*, Fieb. *P. purpureipennis*, Dall., D. and S. (nec De G.). *P. lituratus*, Stål, Hem. Fab. i, 31, 1.

ACANTHOSOMA TRISTRIATA.

Cimex tristriatus, Fab. Mantiss. ii, 293, 135, E.S. iv, 112, 125, S.R. 169, 74. *Cyphostethus lituratus*, Fieb. *Acanthosoma picta*, Newm., D. and S. *Cyphostethus tristriatus*, Stål, Hem. Fab. i, 39, 1.

PENTATOMA VIRIDISSIMA.

Cimex viridissima, Poda. *C. prasina*, Fab., Fieb., (nec Lin.) *C. dissimilis*, Fab., Fieb., D. and S. *Palomena viridissima*, Muls. and Rey, Stål.

BERYTINA.

NEIDES PARALLELUS, Fieb.

Neides depressus (Fieb.), D. and S.

TINGIDINA.

TINGIS, Fab.=MONANTHIA, Fieb.

Stål says "*Tingis cardui* a Fabricio ipso typus generis describitur," but not so in the Systema Rhyngotorum, where the genus was characterised, and the first, or typical, species is *Cimex clavicornis*, Lin.

Tingis Fabricii, Stål=*Monanthia costata*, Auct.

GALEATUS, Curt., Stål=*Tingis*, Fieb., D. and S., &c.

Lacometopus costatus=*Tingis costata*, Fab.

These changes will only be valid if Stål's view of the type of the genus *Tingis* be adopted.

CAPSINA.

PHYTOCORIS FLORALIS.

Cimex floralis, Fab., Mantiss. ii, 303, 248. *Lygæus floralis*, Fab., E.S. iv, 171, 127; S.R. 235, 156. *L. vividus*, Fab., S.R. 237, 170. *Phytocoris divergens*, Fieb., D. and S. *P. floralis*, Stål, Hem. Fab., i, 87, 1.

MACROCOLEUS SOLITARIUS, Mey., Fieb., D. and S.

Amblytylus affinis, Fieb., D. and S. (a deeply coloured var.).

PSALLUS ALNICOLA, D. and S. (emend.).

Psallus alni, D. and S. (nec Fab.).

PSALLUS ALNI.

Lygæus alni, Fab., E.S. iv, 175, 143; S.R. 238, 177. *Psallus alni*, Stål, Hem. Fab., i, 88, 1. *P. querceti*, Fieb., D. and S.

ORTHOCEPHALUS CORIACEUS.

Acanthia coriacea, Fab., E.S. iv, 69, 7. *Salda coriacea*, Fab., S.R. 115, 8. *Orthocephalus mutabilis*, Fieb., D. and S. *O. coriaceus*, Stål, Hem. Fab., i, 88, 1.

ANTHOCQRINA.

TEMNOSTETHUS NEMORALIS.

Acanthia nemoralis, Fab., E.S. *Salda nemoralis*, Fab., S.R. *Temnostethus lucorum*, Fieb., D. and S. *T. nemoralis*, Stål, Hem. Fab. i, 90, 1.

ANTHOCORIS AUSTRIACUS.

Lygæus austriacus, Fab., S.R. 239, 181. *Anthocoris nemoralis*, Fieb., D. and S.

LYCOTOCORIS CAMPESTRIS.

Acanthia campestris, Fab. E.S. *Salda campestris*, Fab., S.R. *Lycotocoris domesticus*, Schill., Fieb., D. and S. *L. campestris*, Stål, Hem. Fab. i, 90, 1.

OCULATINA.**SALDA LATERALIS.**

Salda lateralis, Fall., Sahlb., Fieb., D. and S., Stål, Vet. Ak. Förh. 392, 10 (1868). *S. eburnea*, Fieb. *S. pulchella*, Curt., H.-Schf., Fieb., D. and S.

SALDA MARGINALIS, Fall., Stål, D. and S.

Salda costalis, Sahlb.

Stål also quotes as synonymous *S. marginella*, Fieb., but we have an English specimen, so named by Fieber himself, which is certainly different, and which we have hitherto refrained from noticing, because we are not satisfied that it is distinct from *S. saltatoria*, which it more nearly resembles.

SALDA SCOTICA.

Acanthia scotica, Curt. *Salda scotica*, Stål, Vet. Ak. Förh., 389, 4 (1868). *S. riparia*, Fieb., Wien. Ent. Monats. vii, 62, D. and S. (nec Fall.). *S. hirsutula*, Flor. *S. littoralis*, Fieb. Eur. Hem. (nec Lin.).

Salda conspicua, D. and S., E. M. M., iv, 93, belongs to the section of the genus in which the pronotum is elongate, and narrow in front; e. g., *S. cincta*, H.-Schf. It is very like *S. affinis*, Zett.=*S. luteipes*, H.-Schf. Wanz., vi, 40, t. exciv, fig. 597; Fieb.; but differs in some particulars, especially in the colour of the antennæ, which is yellow on the first two joints of *affinis*, but in *conspicua*, except on the inside of the first joint, it is black.

SALDA GEMINATA.

Salda geminata, Costa, Fieb., Stål. *S. elegantula*, D. and S. (excl. syn.).

SALDA ELEGANTULA.

Salda elegantula, Fall., Fieb., Zett., Stål. *S. Flori*, Dohrn, D. and S.

For the greater part of the above emendations we are indebted to the investigation of the Fabrician type-specimens by Dr. Stål, as indicated in his "Hemiptera Fabriciana" (1868), and to the same author's "Synopsis Saldarum Sueciæ," in "Ofversigt af K. Vet. Akad. Förhandlingar" (1868).

Insects in Birds' Nests, &c.—The interesting communication of Mr. E. A. Waterhouse (p. 15) reminds me that Herr Cornelius published in the "Stettiner Entomologische Zeitung," 1869, p. 4081, an account of his researches in birds' nests; and, as the author says, as the subject has received but little notice, it may be useful to draw the attention of our collectors thereto, and to this end I give a résumé of Herr Cornelius' discoveries.

In Germany it is common to put up, on trees and houses, boxes in which starlings (*Sturnus vulgaris*) make their nests. In one such box, after three years' use, at first by starlings, and then for two years by swifts (*Cypselus apus*), were found 55 pupæ of *Oxypterum pallidum*, Leach, from which the flies emerged in the April following, but a few produced a parasitic *Pteromalus*; also some living *Cryptophagi* and *Lathridii*: other boxes gave a like result. An examination of the excrement of the old swifts showed that these birds feed only, in part at least, on flies and soft insects, and for the rest on hard *Coleoptera*. Undigested fragments—elytra, heads, and legs,—of *Psylliodes chrysocephalus*, Linn., abounded to such an extent that the excrement was rendered shining-green; often an entire beetle of this species, or of *Ps. nigricollis*, Marsh. (which the author rightly esteems only as a var. of it), was found therein. In the excrement of the young birds were seen many remains of other beetles, namely, *Tachyporus*, numerous *Curculionidæ*, especially *Phytonomus*, and ("if I do not err") *Polydrusus*, also *Apion* and *Ceuthorhynchus*. Of the *Rhynchota* several species of *Aphrophora* were numerously represented.

"One does not comprehend how the swifts obtain these insects, which mostly "live on the leaves of low plants, considering that the birds are scarcely ever seen "elsewhere than high in the air." In the nests of the swifts were found many examples of *Anthrenus pimpinellæ*, in the larva, pupa, and imago states; in one, which was only one summer old, as many as 110 larvæ, and, says the author "I "believe I may venture to assume that this beetle is developed exclusively in con- "nection with *Cypselus apus*."

In the nests of the swallows (*Hirundo rustica*) were found several species of *Ptinus*, *Cryptophagus*, and *Lathridius*, and numerous pupæ of a fly hitherto not much noticed—*Ornithomyia tenella*, Rogenhofer, which were developed in a room from March to May. The perfect insect flies well, by starts. The pupæ are smaller than those of *Oxypterum pallidum*, but larger than those of *Stenopteryx hirundinis*, Linn., also somewhat flatter and more chestnut-brown coloured than the latter, which are almost coal-black and shining. *Lepisma saccharina* was especially abundant in these nests; 40 specimens, large and fine, were taken, in the winter, out of one nest. *Chelifer cancrroides* was also abundant, and many larvæ of *Tenebrio molitor* and *Attagenus pelli* were found.

In the nests of the martin (*Hirundo urbica*) were found species of *Ptinus* and *Lathridius*, numerous light-coloured fleas, and a quantity of pupæ of *Stenopteryx hirundinis*, often 100 in a nest, and *Lyctocoris domestica*, larva and pupa. "Here, and also in sparrows' nests, lives an *Acanthia*, which, notwithstanding Herr Fieber's view to the contrary, is certainly distinct from *A. lectularia*." [This is most probably *A. hirundinis*, Jenyns. Fieber says in the Europ. Hemipt. that all the so-called species that he had seen were only *A. lectularia*.—J. W. D.]

In the nests of the sand-martins (*Hirundo riparia*) *Saprinus rugifer*, numerous *Haploglossa pulla*, Gyll., and *H. nidicola*, Fairmaire.

In hens' nests, in April, a vast number of great fleas, with extraordinarily long antennæ; many larvæ of *Tinea pellionella*; several *Attagenus pelli*, some common *Corynetes*, and numerous *Lyctocoris domestica*; also many larvæ of *Tenebrio molitor* and two of *T. obscurus*; the latter became pupæ on the 20th April, and perfect insects ten days after.

In pigeons' nests, a *Homalota*, species unknown; *Aleochara villosa*, Mannerh.; and *Saprinus rotundatus*. Of Dipterous larvæ, *Cyrtoneura cæsia*, Meig., and *Homalomyia canicularis*, Meig.

In old birds' nests in trees, viz., of *Fringilla chloris*, a small *Scymnus* and *Coccinella bipunctata*; and of *Turdus merula*, two examples of *Othius melanocephalus* occurred.

(I may add that *Acanthia pipistrelli*, Jenyns, was found in England two or three years ago, in a bat's nest, by Mr. G. R. Crotch. *A. columbaria*, Jenyns, was originally found in pigeons' nests, and *A. hirundinis*, Jenyns, abundantly in martins' nests, in Cambridgeshire: all the species are now great desiderata).

M. Edouard Perris, in the "Annales de la Société Entomologique de France," vol. ix, 1869, p. 468, records his observations on the examination of swallows' nests in the Landes. He notes that the larvæ of *Lucilia dispar* are therein to be found in the spring, and in the autumn and winter pupæ of *Ornithomyia aricularia* and *Stenopteryx hirundinis*, and larvæ of *Attagenus piceus* and *Anthrenus pimpinellæ*. Dipterous pupæ were also found by him in larks' nests.—J. W. DOUGLAS, 15, Belgrave Terrace, Lee, 7th June, 1871.

War and Entomology.—In the report of the meeting of the French Entomological Society, held on the 26th October, 1870, we read: "M. Lucas exhibited an *Astinomus ædilis*, ♀, found living in the 'Jardin des Plantes.' He caught the insect flying at the end of October, and attributes its presence in that locality to fir-planks, with which a military ambulance was in course of construction in one of the galleries of the Museum of Natural History."—EDS.

Myrmecomorphus rufescens, Westw.—The capture of this remarkable insect by Mr. Dale, in Dorsetshire, was followed by that of a second specimen, taken by myself, in Swithland Woods, Leicestershire, at the end of June last.—T. A. MARSHALL, St. Albans, July, 1871.

Agriion tenellum at Weybridge.—The "Club" excursion on the 1st will be a memorable one with me, in consequence of my friend Baron De Selys Longchamps having formed one of the party. I had hoped that, on his account, dragon-flies would have put in a respectable appearance. Eleven species (one-fourth of the British list) were observed, but only singly or in few individuals. The best was *Agriion tenellum*, an exceedingly local species, and one of the instances of South European forms extending northwards to the southern portion of this island.—R. McLACHLAN, Lewisham, 10th July, 1871.

Sialis fuliginosa at Braemar.—Both species of *Sialis* (*fuliginosa* and *lutaria*) occur here.—F. BUCHANAN WHITE, Castleton of Braemar, 2nd July, 1871.

A note affecting the question of Hybridism.—At the end of May last I captured at Deal a male of *Ceuthorrhynchideus troglodytes*, in copula with a female of *Cæliodes didymus*,—and effectually so, as the specimens have not become disunited in death. If the female had happened to be a *Ceuthorrhynchus* some light might have been thereby thrown on the question raised concerning *Ceuthorrhynchus marginatus* and *C. distinctus* (Bris.), by Mr. Rye in this Magazine.—E. A. WATERHOUSE, Ripon.

Notes upon the Lepidoptera of the South-west of Scotland.—To thoroughly change the scene of my explorations, instead of going north I went south in 1870, and took up my residence on the shores of the Solway Firth, in Cobend, Kirkcudbrightshire. This locality was just the opposite of my expectations, for instead of being a rich, wooded country, it is almost destitute of trees, and rocky in the extreme. Instead of hedges the fields are divided by walls of loose stones, and in every direction large masses of granite, which forms the chief geological formation of the district, crop out; while along the sea coast, instead of the undulating sand hills, rich in *Agrotis* and *Leucania*, which I had pictured to myself, are great precipices, on whose ledges samphire and other maritime plants abound. However, it did not prove an unproductive entomological locality; and when the whole of the country, which is not all of the same nature, comes to be explored, I have no doubt that Kirkcudbrightshire will be found to be as rich a district as any in Scotland. And I am glad to say that there is every chance of its being explored, as it possesses a resident entomologist in the person of my friend Mr. Douglas Robinson, of Almorness, with whom I had many days' pleasant collecting.

The butterflies seen by me here are 21 in number, and do not require especial notice, except in the case of *Cænonympha Tiphon*, Rott. (*Davus*, F.), which occurred on Cloak moss. On going on to the moss I noticed *Rhynchospora alba*, the food-plant of the English form of *Tiphon*, and thought that it would be extremely interesting to find that butterfly here. Soon afterwards *Tiphon* turned up, and proved to be the English form *Philæenus*, Esp. (*Rothliebi*, Stgr.). I have not noticed the *Rhynchospora* in localities where the Scotch form *Laidion*, Bkh., abounds, and it is very likely that its food-plant is different, though the *Rhynchospora* is not an uncommon plant throughout Britain.

Among the *Nocturni* the following are worth mentioning: *Sesia philanthiformis* all along the coast, but, though the larvæ and pupæ were not rare, I did not see a single imago at liberty, and only succeeded in breeding a few. This species appears to live for two years in the larva state, as half-grown larvæ were common at the time that the imagos were emerging, and could be found at any time up till the end of September, when I left. *Chærocampa galii*: a very young larva of this species (which at the time I thought was a larva of *stellatarum*) found its way very mysteriously into my umbrella when I was beating broom for caterpillars of *Chesias*. Its end was as mysterious, for, having been taken to Oxford by Mr. Douglas Robinson, it one day took its departure, probably by the window, and was never seen again!

Hepialus velleda was excessively abundant, and several specimens of the aberration *gallicus* occurred. *Liparis auriflua*: a single ♂ was found; this species was not before in the Scottish list.

Among the *Geometræ*, *Ourapteryx sambucata* was conspicuous, but not abun-

dant; *Venilia maculata* was represented by the type and by a very pale aberration; *Selenia lunaria*, ♀, which laid a batch of eggs to prove that it was only single-brooded in that district; and *S. illunaria* came to light in August to show that it was double-brooded; *Panagra petraria* asserted its claims to be put upon the Scottish list; the larva of *Abraxas grossulariata* was found feeding—not for the first time—upon one of the *Crassulaceæ*, *Sedum Telephium*; *Emmelesia affinitata* and *alchemillata*, both occurred, as well as a few specimens of *unifasciata*, hitherto doubtfully Scottish. Of the genus *Eupithecia* the following were found: *venosata*, larvæ in capsules of *Silene*, not before, I think, recorded from Scotland; *pulchellata* (a species which seems always to accompany *Digitalis*), *centaureata*, *succenturiata*, *subfulvata*, *castigata*, *nanata*, *subnotata*, *vulgata*, *absynthiata*, *assimilata*, and *pumilata*. One specimen of a *Thera*, possibly a variety of *variata*, was found far from any fir trees; *Melanippe hastata* occurred on Cloak moss, and *galiata* near the sea. The genus *Coremia* was represented by *propugnata*, *ferrugata*, and *unidentaria*.

The larvæ of *Eubolia cervinaria* devastated *Malva sylvestris*, and *Chesias obliquaria* and *spartiata* were common on broom; the larvæ of the former, however, were often ichneumonized.

Platypteryx lacertinaria was beaten out of a tree at Kirkcannan, and *Cilix spinula* occurred rarely near the sea. Of the *Pseudo-Bombyces*, *furcula*, *vinula*, *reclusa*, *camelina*, and *dromedarius* were found, as well as a mouldy pupa of *trepida*, the latter near Orchardton.

Sugaring produced a good many species, and a prodigious number of specimens of *Noctua*. On one sugared tree I counted at one time no less than 200 specimens, half of them being, probably, *Agrotis exclamationis*, the remainder being divided among 26 species.

Of the genus *Acronycta* the best were: *ligustri*, several varieties of *rumicis* (one of them larger than the type and nearly altogether black), and the larvæ of *menyanthidis* upon its (according to my experience) favourite food-plant, *Myrica*. Of the species worth noticing were, *Mamestra furva*, *Apamea unanimitis*, *Agrotis exclamationis*, several aberrations having the stigmata coalesced and malformed; *A. porphyrea* and *Noctua neglecta* in a locality where there was very little heather; *Noctua confusa*, one decided specimen, *Dahlia* and *xanthographa* with dark hind-wings; *Xanthia cerago*, var. *flavescens*, and *Dianthæcia carphophaga*, *cucubali*, and *conspersa*. I worked hard to try and find some of the Manx *Dianthæcia*, but, though to no effect, I yet think that they may occur there. *Conspersa* lays its eggs inside the calyx, and sometimes on the stamens, of *Silene maritima* and *inflata*. *Hadenus suasa*, an unrecorded Scottish species, came to sugar rarely, but *contigua* was not uncommon. I also found a few larvæ of *contigua*, the imago of one of which is nearly unicolorously greyish-ochreous. On Cloak moss Mr. Douglas Robinson caught in my presence *Hydrelia unca*, a species regarding whose occurrence on this side the Tweed there were some doubts. *Stilbia anomala* rewarded a careful search of ragwort flowers at night, and also, with 11 other *Noctua*, came to light.

Of the *Deltoides*, *Herminia tarsipennalis*, and of the *Pyrilides*, *Botys terrealis* and *Scopula ferrugalis*, may be noticed as additions to the Scottish list; *B. terrealis* may have been common, but I passed it over at the time as *fuscalis*, which also oc-

curred. The following *Scopariæ* were taken : *ambigialis*, *cembra*, *pyralella*, *mercurella*, and *cratagella*. Eight *Crambi* were seen, the best being *inquinatellus* and *Warringtonellus*, and at light two specimens (♂ and ♀) of *Chilo mucronellus* astonished me one night; where they came from I cannot imagine, as the window faced the sea, and there were no reeds within sight. It is perhaps worth noticing that about this time (July 23), for two or three nights, insects came in swarms to a lamp placed at an open window. Among the visitors were two species of *Bombyces*, eleven *Noctuæ*, nineteen *Geometræ* (including *Chesias obliquaria* and *Emmelesia unifasciata*), thirteen *Pyralides* and *Crambites* (several of which were such day-flying species as *Herbula cespitalis*, *Pyrausta purpuralis*, and *Phycis subornatella*), and many *Tortrices* and *Tineina*. In the flower seeds of several species of *Compositæ*, the larvæ of *Homæosoma saxicola* were common. These larvæ, when full-fed, spin a cocoon, but do not become pupæ till some time in spring, consequently there seems to be a considerable difficulty in bringing them to the perfect state, unless they are left damp. Most of mine, having been left dry here, died, but I have reared one specimen by placing the cocoon among the damp moss in a forcing apparatus (à la Dr. Knaggs, vide "The Lepidopterist's Guide"). One larva at least, after being placed among the moss, came out of its cocoon and made a fresh one. A few specimens of *Phycis subornatella* and *Rhodophæa advenella* occurred; the latter and *Pempelia palumbella* have not, I think, been previously recorded as found in Scotland.

I found a good many *Tortrices*, but none of any great rarity. Among the best were *Sericoris littoralis*, bred from larvæ found on *Armeria*, *Sciaphila Penziana* and *octomaculana*, *Eupæcilia maculosana*, and the dubious heath-frequenting *ciliella*.—F. BUCHANAN WHITE, Braemar, July, 1871.

Capture of a Zygaena new to the British lists.—To-day I had the pleasure, shared by Mr. J. W. H. Traill, of taking several examples of *Zygaena exulans*, Hchw., a species hitherto unrecorded as British. They were found at an altitude of from 2400 to 2600 feet, on a hill in Braemar. *Z. exulans* does not greatly resemble any of the other British species of the genus. The antennæ are clavate, and obtuse at the apex; the wings, which are sparingly scaled, are of a dull, dark green, with five dull carmine spots, of which the first is long and narrow and overlaps the basal half of the third; the second and third spots are small; and the fourth and fifth large. The hind-wings are dull red, with a dull green border, which is broader and darker in the male. The fringes are ochreous, and the abdomen black and shaggy. In the typical *exulans*, which occurs on the higher Alps and Pyrenees, the nervures are sprinkled with ochreous, but in the var. *vanadis*, Dalm., which is the Scandinavian form, the wings are more sparingly scaled, and the ochreous is absent. Our specimens appear to be intermediate between these two forms, as, though the male has no ochreous, the female has the nervures and collar distinctly marked with this colour. *Z. exulans* is about the size of *Minos*.—ID., July 17th, 1871.

Description of the larva of Tapinostola elymi.—My best thanks are due to Mr. James Batty, of Sheffield, who took a long journey during inclement weather, that he might search for the larva of this species, comparatively new to our lists; and

it may be supposed how much I rejoiced at the success of his expedition, when, on the 16th of May last, I had the pleasure of receiving from him a consignment of growing plants of *Elymus arenarius*, containing several full-sized larvæ.

Of course I am not able to give any account of their earlier proceedings, but at the date above mentioned, they are found feeding in that portion of the plants just above the root, where the blades of the grass spring upwards together, overlapping each other for about six inches or so, before they begin to diverge or fall apart, and assume the glaucous hue above the surface of the sand in which they grow. Nor when the larvæ are full-fed do they change their abode, but spin around them a very slight, though tolerably firm cocoon, with gnawings of their food and particles of frass, between two blades. The lower end of the cocoon, which is rather pointed, is sometimes mixed with grains of sand; the whole structure in shape being fusiform, and about one inch and a-quarter in length. Several moths emerged on the 4th of July, at 10 p.m., and made a short flight in my room as soon as their wings were dry,—one on the 8th emerged at midnight and was ready for flight in a quarter of an hour.

The full grown larva is from 1 to $1\frac{1}{2}$ inch in length, not very stout, cylindrical, and uniform in size except at the second segment, which tapers a little anteriorly, the head being still smaller and sometimes retracted into it; the anal segment also tapers off to a rounded tip, in size about equal to the head. Its skin is plump and smooth, the segmental divisions very moderately incised, and the sub-divisions delicately defined, the sides dimpled, the head and plate behind it, the anterior legs, the anal plate, and the spots, are all very shining, the rest of the body without much polish; it is of a pale, flesh colour, the pulsating dorsal vessel being of a little deeper flesh tint; on each side of this dorsal stripe are just to be discerned, though very faintly, four transverse bars of a rather deeper tint of the ground-colour on each segment, the broadest being in front; the spiracles are black, and along their region the colouring becomes paler, more of a whitish-yellow, as though the interior of opaque whiteness showed through the flesh-coloured skin; the head is reddish-brown, blackish-brown about the mouth; the plate on the second segment is pale yellowish-brown, two pairs of pale, oblong, yellow-brown spots are on the front division of the thirteenth segment, and the anal flap is covered with a plate of the same colour, having a fringe behind of fine, brown bristles; the tubercular dots of the back, and their excessively short bristles, are so very small as to be invisible without a powerful lens; the anterior legs are pale brown, the pro-legs tipped with dark brown.

The pupa varies from five-eighths to three-quarters of an inch in length; is rather slender in form, smooth, and shining, and of a light brown colour.—WM. BUCKLER, Emsworth, July 11th, 1871.

Larva of Eupithecia irriguata at Exeter.—On June 21st I beat from an oak, situated on the border of a beech wood, a small looper, which, by the help of the description by C. Dietze, translated in E. M. M., vol. vii, p. 14, I made almost sure belonged to this species, and have since had all doubts removed by the sight of two figures, taken by my friend Mr. Buckler, of larvæ from which the moths have been reared; this is one of the handsomest of our small geometric larvæ, and it seems strange that we have not taken it more frequently.—J. HELLINS, Exeter, July 7th, 1871.

Tapinostola elymi and *Miana arcuosa* bred.—I am happy to say that I am now breeding *T. elymi* from larvæ I took early in May at Cleethorpes, feeding in the stems and roots of *Elymus arenarius*. *Miana arcuosa* is making its appearance rather freely in my breeding-cage.—JAMES BATTY, 81, Wintworth Street, Sheffield, June 21st, 1871.

Note on the economy of Cossus ligniperda.—Near the bowling-green here, is a birch tree much infested with *Cossus* larvæ. Up to the present time I have always believed the full-grown larvæ spun up among the frass and debris under the bark and inside the tree.

About a fortnight since this view was considerably shaken, on finding at some short distance from the tree two empty pupa cases, close to circular holes in the earth, corresponding in size to the pupæ. At once I suspected the larva had spun up underground, and yesterday I had the best proof that this view was correct, by finding a large ♀ moth, just emerged from the green turf of the bowling-green, the pupa case lying close beside her, and within an inch or so a circular hole from which I extracted the stout cocoon with my finger. This was at least 20 yards from the birch tree.—GEO. NORMAN, Clunty Hill, Forres, N.B., 1st July, 1871.

Crambus myellus at Braemar.—To-day I found on the window a very fine example of this species.—F. BUCHANAN WHITE, Castleton of Braemar, 2nd July, 1871.

Sound produced by Halias quercana.—A specimen of *H. quercana*, after an uneasy existence in its boat-shaped cocoon, emerged last week. The rustling noise the pupa makes in its cocoon I did not investigate, and will not attempt to account for. After the insect emerged I made a careful study of its actions and external configuration (keeping it alive for four days), and arrived at the following results:—The imago makes a “membranous” sound: first, when it expands its wings; secondly, when it flirts its partially expanded wing; and thirdly, on a still, sultry afternoon, a continuous rustling sound is produced during flight. The spot whence proceeds the first noise I am certain about, and have no reason to doubt that the others are produced in a like manner. Furthermore, I conclude the same structure and sound exist in *H. prasinana*.

On looking at the thorax, from above, the most conspicuous objects are the patagia. To prove that these had no connection with the sound I detached one, and expanded the wings on that side. When thus expanding the wing I heard a “click,” which was repeated again and again as the wings were moved. I found that the inner margin of the fore-wing caught a little horny lateral thoracic plate when in the act of expanding, and left it with a jerk, which most obviously produced the click.—A. H. SWINTON, 7, Portsdown Road, Maida Hill, July, 1871.

. It will be remembered that last year (see E. M. M., vol. vii, p. 231) Mr. Swinton asserted his belief that *H. prasinana* produced an audible noise. This year he has followed up the enquiry, and very kindly sent us living specimens of *H. prasinana* (as did also Mr. Hellins), which he believed to have heard produce a sound. We were not fortunate enough to detect it ourselves. There is much that is singular in the formation of the parts of the body intermediate between the thorax and abdomen in the genus *Halias*, and we are willing to accept Mr. Swinton’s testimony that they are connected with sound-producing powers. In answer to our query as

to whether the frenum, or spur, of the hind-wing might not be connected with the sound, Mr. Swinton informs us that, according to experiments he made, the spur has nothing to do with it. He has sent us excellent drawings of the structure of the body of *H. quercana*, which we are sorry we cannot reproduce.—EDS.

Eidophasia Messingiella bred.—At last I have succeeded in detecting the larva of this pretty species. I had fancied it must feed on *Equisetum*, as that plant always grew where I took it most freely. The first week in May, whilst hunting amongst the *Equisetum*, I observed two leaves of *Cardamine amara* (large bitter-cress) pulled together by a silken thread; at once I thought of the long sought *Messingiella*, and sure enough, there was a small green larva, not at all unlike that of a *Plutella*. I revisited the locality twice, and collected about a dozen of these larvæ, which fed well, and formed open net-work cocoons similar to those of the genus *Plutella*. Two specimens of the imago appeared on the 18th June.

The larva is green, rather larger than that of *Plutella cruciferarum*; the pupa is of a yellowish-green.—J. B. HODGKINSON, 15, Spring Bank, Preston, June 24th, 1871.

Rhodophæa marmorella bred.—Early in May I found several larvæ feeding on the lichen that grows on some stunted sloe-bushes on Whitbarrow, in Westmoreland. I could not find the leaves at all eaten; the larva makes a gallery at the end of the sloe-twigs, I fancy mainly to change in, as I found the pupa as well. The larva seems sometimes to save itself the trouble of spinning silk by using up the wool that was sticking to the bushes, where the sheep had passed through.

The larva is a flat, brown one, with a black head. Mr. Buckler will no doubt describe it better than I can. About a dozen specimens of the perfect insect were out when I returned home on the 19th June.—ID.

Note on Entomological Nomenclature—Mr. Kirby, in the last number of the Ent. M. Mag., states that Linnæus gave names in 1746 which he, "with scarcely an exception," altered in 1758. If any one will examine the first ed. of the "*Fauna Suecica*" he will find that no specific names are used in that work, the familiar twelve-worded diagnosis being alone appended to each insect. Moreover, in the preface to his tenth ed. of the "*Systema*" (1758), he says expressly that he uses trivial names for the first time; and I can only suppose that Mr. Kirby refers to the fact that, after the synonyms, the common name is added; thus No. 772 is distinguished "*vulgo*, Morio:" the essence of a specific name, however, is that it is not the common name.—G. R. CROUCH, University Library, Cambridge, 3rd July, 1871.

ENTOMOLOGICAL SOCIETY OF LONDON, 3rd July 1871.—A. R. WALLACE, Esq., F.Z.S., President, in the Chair.

Professor Westwood exhibited the minute-book of proceedings of an Entomological Society existing in London in 1780. The members appeared to have consisted of Messrs. Drury, Honey, Swift, Francillon, Jones, and Bentley. The meetings were held weekly, but, in consequence of some internal disagreement, the society seemed to have collapsed in about a year.

Mr. S. Stevens exhibited a collection of *Coleoptera*, recently made by him in Ireland. The most interesting species was *Chlœnius holosericeus*, of which he had captured several specimens at Killaloe, near Lough Derg.

Mr. Champion exhibited *Emus hirtus*, captured by him in cow-dung in the New Forest, being the only instance of its occurrence since the late Mr. Haward found an example many years ago. He also exhibited *Drymus latus* and *Corizus Abutilon*, new to Britain, recently described in this Magazine by Messrs. Douglas and Scott.

Mr. Blackmore exhibited a collection of all orders of insects from Tangiers. Locusts, *Acrydium peregrinum*, were extremely abundant and destructive there, and often lay ankle-deep along the sea shore. They were destroyed by wisps of straw, and he had not observed that trenches were dug to stop their ravages. Mr. McLachlan having remarked that the Chinese held, or did hold, an opinion that locusts were developed from the eggs of craw-fish, Mr. Blackmore said that the Spanish word "langosta" signified both locust and lobster.

Mr. Dunning read a communication from the Rev. Mr. Wayne, of Much Wenlock, complaining of the damage occasioned to his strawberries by a small myriopod, which entered into the interior of the ripe fruit. Mr. Wayne also said that his young carrots were destroyed by a Dipterous larva, probably that of *Psila rosæ*, which bored down the centre of the root. Mr. Druce had observed similar ravages at Kingston.

Mr. Druce exhibited a collection of rare Diurnal *Lepidoptera*, including species of *Papilio*, *Euryades*, *Heliconia*, *Eresia*, *Catagramma*, *Agrias*, *Paphia*, &c.

Mr. Stainton exhibited, for the Rev. R. P. Murray, an example of *Botys fuscalis*, captured by the latter gentleman in the Isle of Man. To the head of this still adhered a portion of the puparium, the antennæ and haustellum being disengaged; the case of the latter projected at right angles from the under-surface of the head, simulating the rostrum of a *Panorpa*. Notwithstanding that the insect must have been nearly blind, it was flying briskly at the time of capture.

Mr. Albert Müller exhibited a vine-leaf, from Basle, covered with the fur-like spots, known as *Erineum vitis*, caused by *Phytoptus vitis*, an Acarus.

Mr. Riley, State Entomologist of Missouri, exhibited a collection of North American insects and their transformations. Among them were Coleopterous larvæ, which Dr. Le Conte, who was present, referred to *Pyrochroa flabellata*.

Prof. Westwood read a paper on new species of exotic *Papilionidæ*. Having used the term "sub-species," he explained this by saying that a sub-species he considered to be a modified form of a species as originally created. Mr. Jenner Weir objected to the use of the word "created" in scientific communications.

Mr. S. S. Saunders read a monograph of the *Strepsiptera*. The genera and sub-genera described amounted to 8, and the species to 21, comprising *Halictophagus* 1, *Stylops* 5, *Hylecthrus* 3, *Elenchus* 3, *Myrmecolæ* 1, *Xenos* 1, *Pseudoxenos* 3, and *Paraxenos* 3. Sixteen of these were European (seven British) and five exotic. He considered the group as undoubtedly Coleopterous and allied to *Rhipiphorus*.

Mr. H. W. Bates read descriptions of three new species of *Cicindelidæ*.

Mr. C. O. Waterhouse read a paper on some black species of *Cantharis*, with red heads and filiform antennæ.

Baron De Selys Longchamps communicated "Aperçu statistique sur les Névroptères Odonates," in which he estimated the number of known species of dragon-flies at 1344.

The first meeting after the recess will be held on the 6th November.

ADDITION OF SIX SPECIES (INCLUDING TWO NEW TO SCIENCE) AND
TWO GENERA TO THE BRITISH LIST OF COLEOPTERA.

BY D. SHARP, M.B.

The following list of *Coleoptera* new to the British list were captured at Braemar in June last by Dr. Buchanan White and myself.

Olophrum consimile, Gyll. Distinguished from our other species by the prothorax being sinuate at the sides behind the middle. A single specimen in moss (Dr. White).

EUDECTUS WHITEI, nov. spec. *Niger, subnitidus, crebre fortiter punctatus, subtilissime pubescens, thorace breviusculo, lateribus fortiter angulato dilatato, geniculis tarsisque piceis.* Long. $1\frac{1}{2}$ lin.

An E. Giraudi var.?

This insect agrees very well with Kraatz's and Thomson's descriptions of *E. Giraudi*, except as to colour; *E. Giraudi* being described as "*rufo brunneus*," whilst this is intensely black, the knees and tarsi only being slightly paler. I found a single specimen under a stone on the summit of Ben-a-Bhuird. Of our British species, it most resembles *Coryphium angusticolle*, from which it is at once distinguished by the strongly angulated sides of the thorax. *E. Giraudi* itself appears to be extremely rare: Kraatz says four specimens have been taken in different parts of Germany, and Thomson only mentions it as having been found by Professor Boheman.

PTILIUM CALEDONICUM, nov. spec. *Oblongum, haud nitidum, sat dense fortiterque punctatum, evidenter pubescens, fusco-testaceum, antennæ pedibusque testaceis, prothorace transverso, basin versus fortiter angustato.* Long. $\frac{3}{4}$ lin.

Slightly larger than *Pteryx suturalis*; variable in colour, generally dirty testaceous, with the head and thorax darker than the elytra; the thorax is rather narrower than the elytra, it is much broader than long, with the sides rounded in front, and much narrowed behind, without channel, but sometimes with an obsolete impression on each side near the base; the antennæ and legs are yellow; in sculpture and pubescence very similar to *P. Spencei*.

This species was found by Dr. White and myself in numbers under the bark of a dead Scotch fir at Braemar. I should have preferred Mr. Matthews undertaking its description, and have only done so myself at his request: I add, by his permission, the following valuable extract from a letter written by him to me:—

"The *Ptilium* lately received from you belongs to an undescribed "and very interesting species. It connects the abnormal *P. croaticum*, Hampe, with *P. Spencei* and its allies; its sculpture and superficial appearance at once denote its affinity to the latter, while its thorax closely resembles that of *P. croaticum* in its enlarged and constricted form. It is just possible that it may have been already described by Col. Motschoulsky; but his short descriptions render identification a matter of so much uncertainty, that I think the best course will be "to name and describe this fine species without delay."

Atomaria badia, Er. I beat a single specimen from Scotch fir; it is most allied to *A. elongatula*, but its thorax is depressed just before the base, and the elytra are more strongly punctured. It does not at all agree with Sturm's figure of *A. badia*, but fits Erichson's description accurately.

Zilora ferruginea, Payk. This fine insect occurred under bark of Scotch fir very sparingly; it comes near to *Dircea*, but cannot be confounded with any British insect.

Hylurgus minor, Hart. Very close to *H. piniperda*, but smaller, always with brown elytra, and the second interstice at the apex thickly studded with tubercles like the others: the posterior tibiæ are also rather differently formed.

Besides the above, our best captures were *Elaphrus lapponicus*, *Amara alpina* and *A. Quenseli*, *Aleochara villosa*, *Bryoporus rugipennis*, *Xantholinus lentus*, *Epuræa silacea*, *Dendrophagus crenatus*, *Cis punctulatus*, *Salpingus ater*, *Pyrochroa pectinicornis*, and *Brachonyx indigena*; but, as Dr. White means to publish a complete list in the "Scottish Naturalist," I must refer for fuller particulars to that periodical.

Eccles, Thornhill, Dumfries: 12th August, 1871.

DESCRIPTION OF A NEW SPECIES OF *MELIGETHES* FROM BRITAIN.

BY E. C. RYE.

I have for some time had in my collection an example of a most remarkable species of *Meligethes*, given to me by my friend Mr. T. Wilkinson, who took it near Scarborough, and which, though I could by no means refer it to any published description, I hesitated to treat as new from a single specimen. Now, however, that more have been taken by Mr. Wilkinson, and by Mr. R. Lawson with him (chiefly on

Helianthemum vulgare, growing on a limestone hill, under some old Scotch fir trees, but also sparingly from *Thymus serpyllum*, *Brachypodium sylvaticum*, *Chenopodium vulgare*, and *Origanum vulgare*), I have no possible room for doubt as to its specific value, and accordingly describe it as follows :—

MELIGETHES PICTUS, *sp. n.* [*Sectio E*, Erichson ; *unguiculis ad basin denticulatis*]. *Breviter ovatus, convexus, nitidus, confertim sat fortiter punctatus, niger, fulvescenti-pubescent, elytris singulatim rufo-maculatis, antennis pedibusque rufo-testaceis, femoribus, tibiis intermediis posticisque externe, nec non tarsorum gracilium apicibus, piceis ; tibiis anticis acute serratis, dentibus apicem versus gradatim majoribus.*

Long. 1—1¼ lin. (Anglic.).

The red spot on the disc of each elytron at once suggests *M. discoideus*, Er., the only other recorded European species exhibiting a similar and permanent coloration (though *M. rufipes*, *lumbaris*, and *æneus* occasionally have lurid elytra) ; but *M. pictus* may at once be known from *discoideus* by the sectional character of its denticulate claws, its shorter and more convex form, less close punctuation, more strongly and closely denticulated anterior tibiæ, &c. In size and punctuation it recalls medium individuals of *M. brunnicornis*, Sturm ; but its legs are somewhat longer and less robust (the tarsi especially being longer and more slender) than in any of our recorded species, giving the insect almost the facies in that respect of a *Brachypterus*. Its average smaller size, rather narrower form, much stronger punctuation, and color differences, and the more even and gradually increased serration of its anterior tibiæ, of which the teeth are sharper and not so stout, readily separate it from *M. solidus*, Ill., the only other recorded British species of its section.

The antennæ are testaceous, with the basal joint and the apex of the club more or less pitchy, the second joint being the lightest in color.

The vertex is shining, flat, evidently emarginate in front, and very closely and somewhat indistinctly punctured ; the mandibles are pitchy-brown.

The thorax is very convex, slightly (if at all) wider behind than the base of the elytra, quite one-third broader than long, distinctly rotundate and very delicately margined on the sides, which are not so gradually contracted from the base towards the front as in *solidus* (so that the greatest width does not seem to be near the base, as in that species), but are nevertheless considerably rounded off in front towards the anterior angles, which are much depressed : the apical margin is widely emarginate, the excavation being rather more decided than in *solidus* : the hinder margin has a wide but slight and very gently rounded projection over the scutellar region, and is more rounded off to the

lateral margins than in *solidus*, with scarcely an indication of the posterior angles: the punctuation of the surface is much as in *brunnicornis*, perhaps a little closer than in that species, and very close in the front and at the sides.

The elytra are nearly half as long again as the thorax, with the sides more parallel and the apical margin more truncate than in *solidus*; their punctuation is much as in *brunnicornis*, only rather more closely packed, so as to be slightly confluent in places, and each of them is marked with a more or less sharply defined red stain on the disc, varying in size from an oblong streak to a broad blotch occupying more than half of each elytron, but never reaching either base, side margin, suture, or apex.

The legs are not so stout as, but longer than, in *solidus*, the tarsi especially being longer and not so dilated, and the apical joint unusually slender and elongate, almost equaling the rest in length, with the claw itself very minute. The anterior pair are bright rufo-testaceous, with slightly dusky femora, and their tibiae are narrower than in *solidus*, and much less strongly but more sharply serrate, the individual denticulations gradually increasing from the base towards the apex, where they are stronger than the corresponding teeth in *brunnicornis*: the fourth denticulation from the bottom is, perhaps, slightly the most developed. The intermediate and posterior pairs are wider and darker than the anterior, having their femora and the outer margins of their tibiae pitchy, the latter being also set with short dark setae. All the tarsi are more or less pitchy, being especially dark at the apex.

Beneath, the insect is black, with pitchy testaceous trochanters.

10, Lower Park Fields, Putney, S.W.

9th August, 1871.

NOTES ON SOME CHILIAN *CICINDELA*, WITH DESCRIPTION OF A NEW SPECIES.

BY EDWYN C. REED.

Upon taking charge of the Entomological Department of the National Museum of Chile, in 1869, I found the genus *Cicindela* represented by one species only, the *C. chilensis* of Aud. and Brullé. This species is not uncommon in the environs of Santiago, running about on the sandy banks of the river Mapocho.

During the summer of 1869—70, a Chilean entomologist, Señor Herreros, took a few specimens of *C. peruviana*, Lap., at Carrizal Bajo. This species is said by Gay, in his *Historia Física de Chile*, Zool., iv, p. 117, to be "very common in Chile, principally in the Cordilleras of Coquimbo, Copiapo, and Santiago;" this, however, with many other statements by the same author, must be taken *cum grano salis*.

In January of the present year, Captain F. Vidal Gormáz, of the Chilean navy, while exploring a river in South Chile, captured another species of *Cicindela*, apparently near *C. patagonica*, Brullé, but of which I can find no description, and accordingly now characterize:—

CICINDELA GORMAZI, *sp. n.*—*Brevis, postice dilatata, obscure piceo-nigra; labri angulis anticis aurantiaco-maculatis; elytris lunulâ humerali, fasciâ medianâ undatâ, lunulâque apicali flavis ornatis, punctis majoribus viridescenti-flavis, ad basin congregatis, prope suturam serie dispositis, punctulisque multis nigris in fasciis flavis oculo armato distinguendis, notatis; pedibus metallescentibus, corpore subtus, fronteque crinibus albis crassis instructis.*

Long. corp. 4—5 *lin.*; *elytr. lat. ad basin* $1\frac{1}{2}$ *lin.*, *post medium*, 2 *lin.*

Habitat: Chile *merid.*

C. Gormazi much resembles *C. chilensis*, but is a much broader insect, and has much more sharply defined edges to the central band of the elytra, which is fringed in *C. chilensis*.

C. peruviana occurs in Northern Chile in an almost rainless region; *C. chilensis* in Central Chile, on the plains of Santiago, with an average rain-fall of 18 days *per annum*; *C. Gormazi* in a region of nearly constant rain, of at least 250 days *per annum*.

Museo Nacional, Santiago de Chile.

April 30th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 7).

BY H^d. W. BATES, F. Z. S.

Genus EUCÆRUS,

Leconte, Trans. Amer. Phil. Soc., x., 1863, p. 386.

The characters of this pretty and curious little genus are well given by Leconte, who mentions its affinity towards the *Lachnophori*, but originally placed it in the same group as *Stenolophus* and *Harpalus*, from which he since removed it. According to him, the mentum is untoothed. The species are free from the punctuation which characterizes nearly all the rest of this sub-family, some of them being quite smooth and glossy. The pubescence of the antennæ begins at the base of the third or even the second joint, and these organs are remarkably long and robust, in most species as long as the body. The palpi have a short downy pubescence. The thorax varies much in shape, but in all its forms shows a distinguishing character in its lobed hind margin, similar to that of the *Lebiæ*. The elytra are broadly truncated and the marginal stria is continued along the apical margin. The eighth stria is generally deepened as it approaches the apex, in a similar way to the genera of the *Tachys* group.

The species have the same habits as the *Bembidiinæ* and the other *Lachnophorinæ*, being found, coursing nimbly, on the moist, muddy margins of pools.

EUCÆRUS SULCATUS, n. sp.—*Minus nitidus, capite nigro, epistomate labroque rufo-testaceis; palpis pedibusque flavo-testaceis; antennarum articulis 1—6 rufescentibus, 8—9 albis (cætera desunt); thorace lato, rufo-testaceo, lateribus explanato-marginatis, postice modice angustato, angulis posticis vix productis, latis, apice obtusis, lobo postico angusto, rotundato; elytris rufo-fuscis, sutura marginibusque pallidis, profunde æqualiter striatis.*

Long. 2 lin.

Banks of the Tapajos. One example.

EUCÆRUS STRIATUS, n. sp.—*Minus nitidus; capite piceo, parte antica, palpis pedibusque flavo-testaceis; antennarum articulis 1—6 rufescentibus, 7—11 testaceo-albis; thorace late cordato, lateribus anguste explanatis, postice sinuatim angustato, angulis posticis vix productis, obtusis, lobo postico lato, minus producto; elytris rufo-fuscis, sutura marginibusque pallidis, æqualiter simpliciter striatis.* *Long. 1½ lin. 3 exempl.*

Banks of the Tapajos, at Santarem. Differs from *E. sulcatus* in its smaller size and the much less sulciform striæ of the elytra. In both the thorax is transverse, with flattened-out lateral margins, the flattened portion broadest at the hind angles.

EUCÆRUS SERICEUS, n. sp.—*Niger, elytris ænescentibus, iridiscenti-sericeis, palpis pedibusque flavo-testaceis; antennarum articulis 1—6 fuscis, 7—11 albis; thorace lato, postice sinuatim angustato, lateribus præcipue prope angulos posticos explanato-marginatis, lobo postico lato; elytris fortiter striatis.*

Long. 1¼ lin. 1 exempl.

Ega.

EUCÆRUS GEMINATUS, n. sp.—*Nigro-piceus; labro, palpis pedibusque flavo-testaceis, antennarum articulis 1—2 rufo-testaceis, 3—6 fuscis, 7—11 albis; thorace capiti latitudine æquali, nitido, cordato, postice fortiter angustato, angulis posticis abrupte productis, parvis, dentiformibus; angulis anticis deflexis, supra antice convexo, lobo postico lato, vix producto; elytris fortiter striatis, margine angusto, maculis rotundatis utrinque duabus, alteraque elongata postica suturali, fulvis, notatis.*

Long. 1½ lin. 1 exempl.

The twin spots of the elytra are situated side by side on the disc near the base, one occupying interstices 3-5, and the other, 7-8; possibly in other examples they may be united and form a short fascia.

Banks of the Tapajos, at Santarem.

EUCÆRUS HILARIS, n. sp.—*Gracilior, nigro-piceus, politus, labro palpis pedibusque flavo-testaceis, antennarum articulis 1—2 flavo-testaceis, 3—7 fuscis, 8—11 albis; thorace capite angustiori, cordato, postice sinuatim angustato, angulis posticis explanatis, abrupte productis; elytris breviter ovatis, subtilissime striatis, utrinque prope basin macula transversa bilobata, alteraque postica rotundata suturali, fulvis, ornatis.*

Long. 1½ lin. 1 exempl.

The thorax is very similar in shape to that of *E. geminatus*, but much narrower, and the elytra are much shorter and rounder, besides being nearly smooth, the striæ being visible only under a powerful lens.

St. Paulo, Upper Amazons.

EUCÆRUS LEBIOIDES, n. sp.—*E. hilari simillimus; nigro-piceus, politus, labro, palpis pedibusque flavo-testaceis, antennarum articulis 1—2 flavo-testaceis, 3—7 fuscis, 8—11 albis; thorace capiti latitudine æquali, cordato, postice valde sinuatim angustato, angulis posticis explanatis, productis; elytris breviter ovatis, subtilissime striatis, utrinque prope basin guttis duabus (interiore majore) maculaque elongata postica suturali, fulvis, notatis.*

Long. 1½ lin. 3 exempl.

Distinguished from *E. hilaris* only by its broader thorax, and the two separate rounded spots of the elytra.

Banks of the Tapajos, at Santarem. In my own collection and that of Mr. Grut.

EUCÆRUS PULCHERPENNIS, n. sp.—*Gracillimus, speciebus Ega generis quibusdam similis; rufo-testaceis nitidus, pedibus pallidioribus; antennarum articulis 1—3 rufo-testaceis, 4—6 fuscis, 7—11 albis; capite supra convexo, lævissimo; thorace capite angustiori, anguste cordato, lateribus angustissime marginatis, basi constricto, angulis posticis haud prominulis, supra antice valde convexo; elytris lævibus, macula humerali vittaque deinde usque ad marginem posticum curvata, suturam attingenti, fuscis, ornatis.*

Long. 1½ lin. 1 exempl.

Banks of R. Tapajos. Resembles *Ega formicaria*, especially in the shape of the head, which, however, is not constricted behind into a narrow neck, neither have the elytra the transverse depression characteristic of *Ega* and *Chalybe*; the thorax is also rather broader and shorter than in those genera.

Genus CHALYBE.

Castelnau, Etudes Entom., p. 92, 1835 (*Calybe*); Hist. Nat. Ins., i, 156, 1840 (*Chalybe*).

The examination of a series of species leads me to think this genus,

abolished by most authors, ought to be maintained. The species resemble the more slender *Lachnophori*, but are at once distinguished by the transverse depression of the elytra before the middle. The terminal joint of the palpi is more tumid, and the mandibles are much longer and narrower. The thorax is much more convex, and the margin which separates the pronotum from the flanks is very feeble, or partially obliterated. The eyes are remarkably large and salient, and the shape of the head triangular, with the vertex plane.

CHALYBE BASALIS, n. sp.—*Capite et thorace cupreis, grosse creberrime punctato-rugosis, mandibulis, palpis, antennarumque articulis 1—4 (cæteris fuscis) rufo-testaceis; elytris fortiter striatis, striis exterioribus flexuosis, supra dimidio basali fulvo, fusco-maculato, dimidio apicali nigro-cæneo, fascia brevi maculari ante-apicali flavo-testacea; pedibus flavo-testaceis, rufescenti maculatis.*
Long. 2 lin.

Banks of the Tapajos.

CHALYBE LEPRIEURII, Casteln., loc. cit. Cayenne. Evidently closely allied to the above, but with two yellow spots on each elytron.

CHALYBE LEUCOPA, n. sp.—*Elongata, nigro-cænea, nitida, antennarum articulis 4 basalibus, palpis, pedibusque testaceo-albis; capite grossissime scabroso-punctato, mandibulis rufo-piceis; thorace elongato, postice gradatim attenuato, basi marginato, margine laterali oblitterato, supra lævissimo, puncto unico utrinque discoidali, lineaque dorsali antice fortiter impressa; elytris fortiter striatis, interstitiis uni-seriatim, leviter, distanter punctulatis, utrinque maculis duabus (quarum una prope basin, magna, quadrata, altera prope apicem dimidio brevior, transversa) testaceo-albis ornatis.*
Long. 2 lin.

Differs from *C. Leprieurii*, Castelnau, by the smooth, glossy thorax. His description commences — “Très-fortement ponctué presque rugueux;” a phrase which can only be understood as applying to the whole body, but which is probably intended to apply to the head and thorax only.

St. Paulo, Upper Amazons, in company with the *Lachnophori*.

CHALYBE INÆQUALIS, Brullé, voy. de d'Orbigny, Ins., p. 44. Closely allied to *C. leucopa*; differing chiefly in the finely-punctured and roughened thorax, and especially in the margins of the pronotum being distinct and entire; a shallow sulcus runs up each side of the disc, from the situation of the usual fovea near the posterior angle. The elytral spots are smaller, and the palpi, base of antennæ, and legs spotted with fuscous.

Ega, Upper Amazons. Taken by d'Orbigny at Corrientes, on the Paraná.

CHALYBE TUMIDULA, n. sp.—*C. inæquali* major, *elytris* latioribus, *thorace* convexiori; *saturate* cenea, dense pubescens, *palpis*, *antennarum articulis* 4 *basalibus pedibusque* flavo-testaceis, *femoribus tibiae* apicibus late infuscatis; *capite* grosse rugoso-punctato; *thorace* valde convexo, *basi marginato*, *lateribus* magis rotundatis, *marginibus antice* solum distinctis, *suprà subtiliter punctulato*, *disco utrinque puncto* majori *lineaque dorsali antice fortiter impressa*; *elytris oblongo-ovatis*, fortiter striatis, *interstitiis sparsim uni-seriatim punctatis*, *utrinque maculis duabus transversis pallidis*, *per strias in maculas minores divisas*, *ad basin obscure rufescentibus*.

Long. $2\frac{1}{2}$ lin.

Ega.

Kentish Town: August, 1871.

DESCRIPTIONS OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

(Continued from page 60).

ACRÆA POLYDECTES, n. s.

Upper-side: fore-wing elongated, brown, darkest at the base and outer margin; within the cell, which at the extremity is marked with red, is a black spot, beyond, a cluster of three black spots; from the under-side of the cell to the hinder margin is red, with three black spots. Hind-wing red, base brown, with five black spots on the outer side; hinder margin bordered with dark brown, with seven small red spots, which are placed on the margin.

Under-side: same as the upper-side, but lighter in colour, and the black spots at the base more clearly defined.

Expanse $3\frac{1}{4}$ inches.

Habitat: Camaroons.

Allied to *Acræa Pereuna*, Doubleday.

ACRÆA PHARSALUS, n. s.

Upper-side: fore-wing red, apex and outer margin broadly marked with brown, within the cell three dark brown spots, and, beyond, an elongated marking of grey; near the anal angle two larger spots of dark brown. Hind-wing red, base light brown, with numerous dark brown spots, which extend to the centre of wing; outer margin bordered with brown, without spots.

Under-side: pale yellowish-brown; markings as on upper-side, but very clear, and the spots on the lower wing black; outer margin of both wings with numerous radiated markings of darker brown.

Expanse $2\frac{1}{2}$ inches.

Habitat: Camaroons.

Also in the collection of Mr. W. C. Hewitson.

JUNONIA KOWARA, n. s.

♂ Fore-wing falcate, hind-wing prolonged at the anal angle.

Upper-side: base brown, both wings crossed vertically with a band of lighter brown, narrow at the fore-margin of upper wing, broadest at the inner margin of lower wing; this band is bordered on the inner side with rosy-purple, and contains eleven small spots, the uppermost white, the others black; outer margin of both wings dark brown.

Under-side: light brown, crossed midway from the anal angle of lower wing to centre of upper wing with a narrow band of darker brown, the base of upper wing with waved markings of darker brown.

♀ resembles ♂, but a lighter brown. Expanse ♂ $2\frac{1}{2}$ inches; ♀ $2\frac{1}{2}$ inches.

Habitat: Old Calabar, Camaroons.

EURYPHENE COMUS, n. s.

♂ *Upper-side*: brown, fore-wing crossed obliquely with an orange band; near the apex a white spot; the apical half and extremity of cell a darker brown.

Under-side: light brown, both wings banded across with purplish-grey; apex of fore-wing tipped with white. Expanse $2\frac{1}{2}$ inches.

Habitat: Camaroons.

EURYPHENE NIVARIA, n. s.

♂ *Upper-side*: brown, fore-wing with an oblique patch of yellow near the apex; darkest towards the outer margin.

Under-side: light brown, with a broad curved band of grey crossing both wings, lightest at the apex of fore-wing.

♀ resembles ♂, but considerably larger. Expanse ♂ $2\frac{1}{2}$ inches; ♀ $3\frac{1}{2}$ inches.

Habitat: Camaroons.

The upper-side of the male resembles *Euryphe Phantasia*, Hewitson, but the female, and the under-side of both sexes, are quite distinct.

(To be concluded in our next.)

Addition of a genus and species to the list of British Xylophagous Coleoptera.—Among some beetles recently taken near Scarborough by that assiduous and successful Coleopterist, Mr. R. Lawson, and sent to me for determination, is a specimen of *Polygraphus pubescens*, Fab. (found under fir-bark). The genus to which it belongs is readily separable from the other *Hylesinides* by each of its eyes being almost entirely divided into two parts, through an encroachment of the lateral piece from which the antenna springs (not of the forehead, as Redtenbacher states); by the third joint of its tarsi not being wider than the preceding; and by the club of its antennæ not being articulated. The club, moreover, is very large, flattened, ovate, and considerably longer than the *four-jointed* funiculus. The anterior coxæ are very close to each other, and the intermediate pair widely separated.

Of our recorded *Xylophaga*, *P. pubescens* can only (even superficially) be compared with *Hylastes obscurus*, Marsh., which it somewhat resembles in size, build, and colour. But, apart from its salient generic differences, it may be known at once from that species by the absence of striæ from its elytra, which are very delicately and confusedly granulose-punctate, and clothed with a mixture of scanty scale-like pubescence and very short setæ (the latter in certain lights indicating the position of the obsolete striæ). Its anterior tibiæ, moreover, are dilated in a much less degree and less abruptly, and are only slightly denticulate-serrate on the outer edge, the teeth becoming gradually more conspicuous towards the apex.—E. C. RYE, 10, Lower Park Field, Putney, S.W., August, 1871.

Notes on Dr. Sharp's Catalogue of British Coleoptera.—As I have lately published a list of British *Coleoptera*, containing the names of species not before brought to public notice as inhabitants of our islands, I give herewith some brief particulars about them. They are:—

Lathrobium atripalpe, Scriba: taken by me at Edinburgh here, and also, I believe, by Mr. Crotch.

Lithocharis diluta, Er.: a male individual of this species was taken by me on the banks of the Cairn, near Dumfries, some two years since.

Oxytelus Fairmairei, Pand.: I have found this species very sparingly in several localities; it is, no doubt, passed over as *depressus* by collectors.

Thinobius major, Kr.: taken by Mr. Crotch on the shores of Loch Rannoch.

Lesteva muscorum, Duv.: taken by me, sparingly, both in Scotland and England, and, I believe, also by Mr. Rye.

Scydmaenus carinatus, Muls.: British examples of this species have been determined for Mr. Crotch by M. de Saulcy.

Orthoperus atomarius, Heer: found abundantly by Mr. Crotch at Devizes.

Phalacrus brunnipes, Bris.: I have found what I suppose to be this species at Chatham and Lympington.

Agriotes sordidus, Ill.: a carded specimen, taken long since by Mr. Wollaston at Southend, is in Mr. Crotch's collection. The species should be found, if looked for, on our southern coasts.

Ptinus subpilosus Müll.: I can give no locality for this species; it has been given me by Mr. Crotch, and I purchased it years ago from Mr. Brewer.

Cis elongatulus, Gyll.: Mr. Crotch considers he has Scotch examples of this species.

Eusomus ovulum, Ill.: taken by Mr. Edleston, at Grange.

Sitones brevicollis, Schön.: this is now considered by M. Allard to be a good species. (In Berl. ent. Zeit.). It is not uncommon in the South.

Bagoüs nigratarsis, Th.: "Cambridge," Mr. Crotch.

Orchestes sparsus, Gyll.: in Dr. Power's collection; confirmed by M. Brisout de Barneville.

Ceuthorhynchus rotundatus, Bris.: taken by Mr. Crotch near London, and confirmed by M. Brisout.

Ceuthorhynchideus pulvinatus, Gyll.: in Dr. Power's collection; confirmed by M. Brisout.

Baridius chlorisans, Germ.: taken by Mr. Sidebotham, at Devizes.

Rhyncolus gracilis, Rosenh. ; in Mr. Crotch's collection ; taken by the late Rev. Hamlet Clark at Esher.

Magdalinus Heydeni, Desbr. : mentioned by the author as British in his monograph of the genus ; he says he has specimens from this country in his collection.

Cryphalus granulatus, Ratz. : in Dr. Power's collection ; confirmed by Herr Eichhoff.

Urodon rufipes, Fab. : taken by Mr. Plant, at Leicester.

Cassida chloris, Suffr. : specimens of a *Cassida* taken by Mr. Lennon and myself, in this district, are different from our other species, and are, perhaps, the *chloris* of Suffrian.

I regret that (owing chiefly to insufficient revision of the proofs) many errors have been allowed to pass, of which I will mention the most important :—

Quedius semiobscurus, Marsh., is omitted after No. 945.

Xantholinus glaber, Nordm., is omitted after No. 1031.

Lithocharis tricolor, Marsh. : there should have been no number before this name, as I intended it as a synonym of *propinqua*, Bris.

No. 1318 : for "*nanus*, W.C." read "*nanus*, Reichenb."

Euplectus Dennyi, Wat. : there should have been no number before this, it being a synonym of *nigricans*, Chaud.

The L has been omitted from *MALTHINUS*.

Dasytes niger, Linn., is, I am informed, undoubtedly a British species, and has been recently taken by Mr. Champion, in the New Forest.

The number has been omitted before *Psylliodes chrysocephala*, Fab., which makes it erroneously appear as a synonym of *hyoscyami*, L.—D. SHARP, Eccles, Thornhill, Dumfries, August, 1871.

Notes on captures of Coleoptera.—*Atemeles paradoxus* : one specimen in April at Folkestone, in a nest of *Myrmica levinodis*, and greatly simulating that ant in appearance. Another specimen was subsequently found (under similar conditions) by my friend Mr. Marsh, who was with me at the time.

Ceuthorhynchus urticae : I have again taken two or three specimens of this species at Mickleham, in May last ; always on nettles, and accompanied by swarms of *Cæliodes didymus*.

Ceuthorhynchus tarsalis : * I have turned up this species (for the first time, I believe, in any great quantity) near Erith, on *Sisymbrium*, and unaccompanied by *sulcicollis*, in June last ; and it has subsequently been taken in similar quantity by Dr. Power, in the same locality. *Ceuth. constrictus* occurred at the same place on *Erysimum alliaria*.

Bruchus canus : in June last I found about a dozen specimens of this species, on the chalk downs at Caterham, Surrey, by sweeping *Onobrychis sativa*. The above species, included (I believe) in our Catalogues, on the authority of two specimens in Dr. Power's collection, taken at Gravesend, is readily separated from *cisti*, its nearest ally (which occurs on *Cistus*), by its larger size and peculiar brownish pubescence (when fresh). The antennæ of the ♂ are longer and stouter than in the ♀, as in *cisti*.

Tychius lineatulus, *Miarus campanula*, *Tomicus dryographus*, ♂, *Smicronyx jun-*

* Should any Coleopterist be in want of this species, I shall be happy to supply him, on receipt of box and return postage.—G. C. C.

germanniae (by sweeping), *Baridius picicornis* (at roots of *Reseda lutea*, as usual), *Aphodius arenarius* and *Deleaster*, on the wing, have also occurred to me in the same locality.

Whilst staying in the New Forest, at Brockenhurst, during the end of last June, I obtained, in addition to the ordinary New Forest things, a specimen of *Emus hirtus*, which occurred just under the edge of some fresh cow-droppings amongst heath; *Colydium elongatum*, one specimen under the loose bark of a felled beech (unaccompanied by *Platypus*, which I dug out of stumps); *Synchita mediolanensis* (?), several specimens under bark of beech, accompanied by a few *Læmophlæus bimaculatus* and *Lathridius carbonarius*; *Athous rhombeus*, one specimen, dug out of a rotten stump; *Melasis buprestoides*, dug out of a felled beech tree; *Leptura scutellata*, about 30 specimens, dug out of a solid beech stump, a number more being smashed in the process; *Strangalia aurulenta*, also dug out of a stump, with several larvæ, which I failed to breed; *Anoplodera sex-guttata*, on umbelliferous flowers; *Grammoptera analis* and *Strangalia nigra*, by sweeping; *Tychius 5-punctatus*, a few specimens on wild tare in plantations; *Tomosia biguttata*, rather common (but difficult to secure), flying about in the hot sun and settling on stumps and felled logs, also dug out of stumps; *Dasytes niger*, Lin. (omitted accidentally from Dr. Sharp's new catalogue), a few specimens picked up singly at different times, in flowers, &c.; *Phlæotrya Stephensii*, two or three, under bark of stumps, and one dug out of solid, hard wood; *Mycetochares bipustulata*, *Diacanthus bipustulatus*, and *Philonthus splendidulus* occurred sparingly under bark. *Tomicus Sæeseni*, *Brachytarsus varius*, &c., occurred by casual sweeping. *Telephorus testaceus* was commonly taken by sweeping in a marshy place, and unaccompanied by *limbatus*.

A hurried visit from Brockenhurst to Bournemouth produced *Polydrosus confuens* in quantity, on furze, there being no broom within sight, as far as I could ascertain. *Smicronys pygmaeus* and *cicur*, and *Apion scutellare* also occurred in the same locality.

Phlæophagus spadix: I found this species somewhat commonly, in July, at Harwich, sticking about the old stumps on the shore (some *in cop.*) at low water, in company with *Ischnomera melanura*, scarcely above (some indeed were below) high water mark. I also found a few specimens by breaking open the stumps; so I have no doubt that it breeds in them, probably just above high water mark.

I may also note that I have secured a second specimen of *Baridius scolopaceus*, from the same locality as before; but all my workings at the plants mentioned in my previous note have, up to the present time, proved abortive.—G. C. CHAMPION, 274, Walworth Road, London, S., August, 1871.

Captures of Coleoptera in Buddon Wood, Leicestershire.—In the last week of May I took, along with many others, the following species:—

Calosoma inquisitor, in plenty, off the stems and trunks of oaks, at dusk; *Rhynchites ophthalmicus*, by beating hawthorn; *Clythra quadripunctata*, off elder trees, in the neighbourhood of ants' nests; *Trachodes hispidus* and *Acalles roboris*, by beating the fallen stems and twigs of oak; *Staphylinus pubescens*, pretty freely, running about a dead rook.

With regard to *Calosoma inquisitor*, where collectors of *Coleoptera* only find one

or two specimens of this insect, if they would examine the trunks of oak trees in the neighbourhood at dusk, they would, from my experience, most probably be rewarded by the capture of a great many more specimens of this interesting insect.

I have noticed a *Calosoma* closely allied to *C. sycophanta*, in great quantities, and under the same conditions, in the woods in Delaware and Maryland, U. S. I think, without doubt, that they ascend the trees at night in search of food, feeding upon the small caterpillars which generally abound upon oak trees in the spring, and that they return in the early morning to hide.

I might say that in Buddon Wood the time of its appearance is about the last week in May or the commencement of June. I have just taken *Auchenia quadrimaculata* in great plenty.—HARRY HOLYOAK, 45, Humberstone Gate, Leicester, July, 1871.

A List of the Odonata (Dragon-flies) occurring in the neighbourhood of Epping.—Having captured a large portion of our British *Libellulae* in the neighbourhood of Epping, I thought a list of them might be interesting to some of your readers. I regret to say that some of the best localities are destroyed, and I am not certain that all the species enumerated are now to be found here. The nomenclature is that adopted by Mr. McLachlan, in his valuable catalogue of British *Neuroptera*.

1. *Leucorrhinia dubia*, Lind.=*rubicunda*, Curtis: found among the old gravel pits on Coopersale Common, but always rare.

2. *Sympetrum striolatum*, Charp.=*vulgata*, Steph. Curtis (nec Linn.): very common everywhere round Epping.

3. *Sympetrum flaveolum*, Linn.: very common in certain years among the gravel pits on Coopersale Common, in August and September.

4. *Sympetrum sanguineum*, Müll.=*rufostigma*, Newman: very common among the gravel pits on Coopersale Common, in September and October.

5. *Sympetrum scoticum* Don.: common in certain years among the old gravel pits.

6. *Platetrum depressum*, Linn.: very common.

7. *Libellula quadrimaculata*, Linn.: the commonest species of the family.

8. *Libellula fulva*, Müll.=*conspurcata*, Fab.: rare, occasionally found flying over a large pond in Ongar Park Woods.

9. *Cordulia aenea*, Linn.: very common on Coopersale Common and other places round Epping.

10. *Gomphus vulgarissimus*, Linn.: very common at High Beech, and occasionally seen at other places near Epping.

11. *Anax formosus*, Lind.=*imperator*, Leach: very common formerly on Coopersale Common, and at two large ponds by the side of the new road through the forest.

12. *Brachytron pratense*, Müll.=*vernalis*, Lind.: common over ponds by the side of Park Hall Woods and other places, in May and June.

13. *Æschna mixta*, Lat.=*affinis*, Steph. (nec Lind.): rare; found on North Weald Common, bordering on Ongar Park Woods, in June.

14. *Æschna cyanea*, Müll.=*maculatissima*, Lat.: very common.

15. *Æschna grandis*, Linn.: common in the autumn.

16. *Calopteryx virgo*, Linn.: common, flying on small streams.

17. (?) *Calopteryx Vesta*, Charp. : I believe this insect to be distinct from *C. virgo*. The wings of the male are always of a bright reddish-brown, and those of the female are much more transparent, and the nervures of a paler green than those of the female *virgo*. It is common in the rides of Ongar Park Woods, flying about the trees. I never saw a specimen of the typical *virgo* there, and there is no running water within two miles.

18. *Calopteryx splendens*, Harris = *Ludoviciana*, Leach : common over small running streams.

19. *Lestes sponsa*, Hans. = *forcipula*, Charp. : common.

20. *Lestes nympha*, Selys : rare ; found on Coopersale Common.

21. *Lestes virens*, Charp. : rare ; among gravel pits.

22. *Platycnemis pennipes*, Pall. = *platypoda*, Lind. : common over small streams.

23. *Erythromma najas*, Hans. = *chloridion*, Charp. : very common on Coopersale Common, among the rushes.

24. *Pyrrhosoma minium*, Harris = *sanguineum*, Lind. : very common.

25. *Pyrrhosoma tenellum*, Vill. = *rubellum*, Lind. : very common formerly among the rushes on Coopersale Common. It is remarkable that this southern species should occur in England.

26. *Ischnura pumilio*, Charp. = *rubellum*, Curt. (neo Lind.) : rare ; occasionally found among the old gravel pits.

27. *Ischnura elegans*, Lind. = *exonotum*, Steph. : common everywhere.

28. *Agrion pulchellum*, Lind. = *puella*, Steph. : not uncommon about the ponds by the side of the new road through the forest.

29. *Agrion puella*, Lind. : common, and generally distributed.

30. *Agrion cyathigerum*, Charp. : found near the large ponds on the new road through the forest.

In addition to the above-named species I once saw a *Cordulia*, very distinct from *ænea*, which I believe was *Curtisii* ; it was at rest, and I plainly saw the yellow dorsal markings. I had no net with me and was unable to capture it.—HENRY DOUBLEDAY, Epping, July, 1871.

[The foregoing list comprises two-thirds of the British species. On Stephens' authority *Lestes virens* is stated to come from the New Forest, but Mr. Doubleday tells me he believes the individuals were taken by him at Epping, and that Stephens afterwards confounded the localities. I scarcely agree with Mr. Doubleday in considering his *Calopteryx Vesta* as distinct from *virgo*, though it may be a race in which the wings of the male never acquire the ordinary adult tinting.—R. McL.]

Capture of Callimorpha Hera near Exeter.—An event of so unusual occurrence as a visit of *C. Hera* deserves to be recorded. On the 14th inst., about 9 p.m., when taking my usual evening round to my sugared trees and plants, my attention was suddenly arrested by the sight of something brightly coloured, like a bright purple and yellow-striped petal of a tulip, lying flat on a sugared corymb of *Tanacetum vulgare* ; and bringing my bull's-eye to bear upon it, it suddenly, to my dismay, moved and took wing ; in an instant, however, my net was ready, and the beautiful creature became my prisoner.—H. D'ORVILLE, Alphington, 16th August, 1871.

[We believe that several other well authenticated cases of the occurrence of *C.*

Hera in the South and West of England have occurred during the last ten years. Possibly those entomologists who are acquainted with such captures will favour us with an account of the circumstances, so as to form a tolerably complete record. There can be no doubt that the species has more right to a place in the British List than many now existing therein. Our younger readers should, however, remember that specimens from the Continent (perhaps we may say, from the Channel Islands) can be purchased for a nominal sum.—EDS.]

Notes on Sesia chrysidiformis.—This clear-wing appears to be rather more numerous here than it was last season; had we had more favourable weather, I have no doubt a goodly number would have been taken; as it is, several entomologists, who recollect many fruitless hours in 1870, think themselves tolerably well off. I suspect the insect has been compelled to betake itself to sorrel as a diet, for few dock-roots have been left on those parts of the Warren where it formerly abounded. I brought home two or three roots, from a new locality, early last year, but only one imago put in an appearance. I then placed the old blackened roots in a box covered with gauze, but without sand, expecting nothing from them, yet not liking to throw away even a faint chance. On going to the box the other day there were three freshly-emerged specimens. Moral: always save your old dock-roots. The imago emerges between nine and twelve, but one came out in the afternoon. When the larva is full-fed, it ascends to the higher parts of the roots, lining its tunnel with silk, and there turns to pupa; some even spin up in the lower parts of the thick stems. When about to change, the chrysalis wriggles itself partly out of the tunnel through a hole previously prepared, but blocked up with frass or mining refuse; these empty pupa-cases then resemble those of *Z. æsculi*, seen in the stumps and sides of trees.—HY. ULLYETT, Folkestone, July, 1871.

Captures of Lepidoptera in Sherwood Forest.—From June 12th to 16th I spent at Sherwood Forest, in company with the Messrs. Daltry, of Madeley, for the purpose of collecting *Lepidoptera*. The weather was very unfavourable, and had been so for some time previously; consequently imagos were very scarce. Sugaring was quite a failure, as indeed it seems to have been throughout the country during the first half of the season. We had most success in beating for larvæ, which were plentiful. The species taken were as follows, omitting the commonest:—*Thecla quercus*, larvæ common; *Chærocampa porcellus*, one specimen flying about a sugared tree; *Hepialus velleda*; *Liparis auriflua*, larvæ in profusion; *Orygia pudibunda*; *Pæcilocampa populi*, one larva beaten from oak; *Himera pennaria*, larvæ not uncommon; *Phigalia pilosaria*, larvæ very common; *Nyssia hispidaria*, larvæ from oak; *Amphydasis betularia*; *Tephrosia biundularia* and *punctulata*, rather common, at rest on trunks of trees; *Iodis lactearia*, *Ephyra punctaria* and *pendularia*, rather common; *Panagra petrararia*, very abundant amongst *Pteris aquilina*; *Aspilates strigillaria*, on the heath; *Hybernia defoliaria*, larvæ abundant; *Cheimatobia boreata*, in the larval state; *Emmelesia decolorata*, *Eupithecia pulchellata*, *castigata*, *vulgata*, and *æquata*, *Thera variata*, *Melanthia ocellata*, *Coremia unidentaria*, *Cidaria corylata*, *Eubolia palumbaria*; *Stauropus fagi*, a beautiful male specimen, at rest on a young oak; *Euperia fulvago* and *Cymatophora flavicornis*, larvæ not uncommon on birch; *Neuria saponaria*, at sugar; *Teniocampa cruda* and *miniosa*,

larvæ common on oak; *Agriopis aprilina*, larvæ; *Hadena thalassina* and *contigua*; *Anarta myrtilli*, on the heath; *Amphipyra pyramidea*, larvæ plentiful on oak and birch; *Euclydia mi*, *Herminia barbalis*, *Halias prasinana*, &c.—GEO. T. PORRITT, Huddersfield, August 14th, 1871.

Natural history of Agrotis corticea.—Few things have afforded me greater satisfaction than my having been able to figure and describe, I believe for the first time, the larva of this species,—one of those subterranean, dull-coloured larvæ, several species of which may so easily be mistaken one for another.

To Mr. George Norman, of Forres, my best thanks are due for the supply of eggs, which reached me on July 17th, 1870. The larvæ were hatched between the 20th and 25th of the same month; those which I kept under my own care had grown to the length of half-an-inch by August 15th, and by October 5th to one inch three-eighths, and, soon after November commenced, left off feeding, being, as I thought, ready for pupation; however, for some reason unknown to me, they all died without changing.

Meanwhile, the larvæ of which Mr. Hellins took charge grew more slowly, not being more than three-quarters of an inch in length when their hybernation commenced, and, luckily, several of them survived the winter; these began to feed again in March, moulted about the beginning of April, and were full-fed from about the end of April to the middle of May. The moths appeared between the 17th of June and 6th of July.

The egg is somewhat the shape of an orange, but with its under-side more flattened, with irregular, shallow ribs and reticulations over its surface, and a central boss or knob in a little depression on the top. It is straw-coloured at first, afterwards of a flesh colour, with pale brown zone or blotches.

When first hatched, the larva is of a greenish-grey, with blackish-brown head and plate behind it, the usual dots black and furnished with hairs. After feeding for a few days, it becomes of a greenish-ochreous tint, and in another week of a greenish-olive, one example alone at this stage having been of a reddish-grey; the dots raised and still furnished with noticeable hairs.

Up to this time, and for a few days longer, we found the habit of this larva was to feed uncovered on any of the various fleshy-leaved plants offered to it, at first eating only the cuticle, but soon making holes in the leaves of *Chenopodium album*, *Polygonum*, clover, &c.; but, when the length of half-an-inch, or thereabouts, had been attained, and the usual *Agrotis* appearance put on, it began to burrow in the loose soil, hiding by day, and coming out to feed at night. Later in the year, and again in the spring, the food supplied was dock, mullein, hollyhock, and slices of carrot; and, in dull weather, if fresh food was put on the surface of the soil, and shaded from the light by leaves thrown over it, we found it would be eaten as readily by day as by night. From the time the larva is about half-an-inch in length up to about an inch, its colour is ochreous, with a dark, double dorsal line, and two lines on each side; the usual warts small and dark brown.

After its final moult, it comes out at first very much darker than before, with quite a noticeable appearance of sootiness over it; all the lines being purplish-black and much diffused; the skin also presents quite a rough surface, and, although this is afterwards partly lost, yet it remains as a distinguishing feature to the end.

When full grown, the larva is $1\frac{1}{2}$ to $1\frac{1}{4}$ inches in length, according to

measurement in repose or motion; rather thick in proportion, cylindrical, and rugose; all the legs short and placed well under the body; in fact, it much resembles *segetum*, save in the rugosity, and in the further distinction, that, whereas the back in *segetum* is coloured differently from the sides, in *corticea* the colour is spread uniformly over both alike: the ground colour then of the full-grown larva is brownish-grey, finely freckled with a rather darker tint of the same; the belly and pro-legs with a slight greenish tinge, and unfreckled: the dorsal vessel is of the ground colour, scarcely paler, enclosed within two lines of darker brown. The sub-dorsal is a dark line of grey-brown, with a fine thread of paler along its lower edge, followed at a little distance by another such pale and rather thicker line, though much interrupted or broken by the deep wrinkles of the skin: at some distance again below runs the sub-spiracular stripe of the same paler, greyish-brown, with a streak of the ground colour through the middle of it; the head has the front margins of the lobes broadly streaked with blackish, and a little at the sides also, and the mouth is large and sometimes blackish: the plate on the second segment is not so noticeable as usual in this genus by any difference in colour, though it is a little darker brown towards the margin in front; the dorsal and sub-dorsal paler threads are faintly seen to pass through it.

As the larva approaches full growth the skin becomes somewhat shining, and the warts which immediately after the last moult came out black, grow paler in the centre and are of a dark brown all round it, each still furnished with a short, fine bristle; the black spiracles are rather small in size.

As noticed before, the general appearance is more unicolorous than that of any species of *Agrotis* I have yet seen.

The pupa is of the ordinary *Agrotis* form, rather stout and very smooth; at first whitish, and changing by degrees to a light orange-brown.—WM. BUCKLER, Emsworth, July, 1871.

Natural History of Hybernia aurantiaria.—On Nov. 6th, 1868, Mr. J. R. Wellman captured three pairs of moths *in cop.*, and very kindly sent on to Mr. Buckler the eggs laid by the females during the next two or three days. The larvæ were not hatched till just about the middle of March, 1869; were fed by me on birch; came to their full growth and spun up about the middle or end of May, and the moths appeared Nov. 4th—13th.

The egg is flattened and somewhat brick-shaped, but with one end more conical; the shell is stoutly ribbed, and reticulated, its appearance under a lens reminding one of coarse basket-work; the colour is at first green, afterwards puce, then reddish, with a long central, blackish spot, and lastly, just before the hatching, smoky.

The newly-hatched larvæ are small in proportion to their full grown bulk; smooth, dark brown on the back, with a yellowish dorsal line, and a more distinct yellow spiracular line; the head brown, a fine pale yellow transverse streak on the second segment; the belly dusky. After the first moult the brown disappears, and the colour throughout becomes olive-green; the next moult results in a pale, olive coat, with the middle of the back still paler; but after the third moult the back begins to show decidedly yellow again; the sides are tinged with brown, and the spiracular line also recovers its yellow; and from this time a nearer approach is made to the appearance exhibited at full growth.

When full grown the larva is rather over one inch and one-eighth in length, in shape moderately slender; viewed from above it appears of nearly uniform stoutness throughout, but viewed sideways the segments 7—10 are rather stouter than the rest; the head is broad, flattened in front, and rounded at the sides, so as to be equal in width to the second segment, which—together with the third and fourth—is a little flattened also; the fifth is more cylindrical, and hence has the appearance of being a trifle thinner than the rest; the skin is tough, furnished with a few bristles, and the back of the second segment is glossy, suggesting a sort of plate there; a pair of rather conspicuous warts on twelfth segment.

Probably there are variations more or less in the colouring, but the larvæ I had were alike, and might be roughly described as being of a dark purplish-brown with yellow markings; but to pick out the arrangement of the markings was no easy matter. The ground colour of the back was pale, dull, ochreous-yellow, and through it a number of fine, brownish lines, not parallel throughout, but approaching and receding, so as to form a pattern; of these two very fine ones through the centre of the back, enclosing a thread of the pale ground; on either side of this pair another darker brown line, and then again another wavy one, touching the broad, deep, purplish stripe which occupied the side from the head to the twelfth segment, on which it mounted up the back, and meeting the stripe from the other side, formed there a Λ mark pointing forwards, and bearing on it the warts of the same colour; below the broad stripe a pale yellow thread, and below this a blackish-purple thread; in the spiracular region, the front of each segment sulphur-yellow, the hinder part dull ochreous; here also could be seen indications of two fine, purplish lines, showing at the beginning and end of each segment, but leaving a clear space for the black spiracles; another line of the same colour below, thickening under each spiracle: the belly dark purplish-brown, with a central, pale, yellowish stripe, opening widest and enclosing a short, black streak in the middle of each segment, and edged with black; a very fine, pale, yellow line also through the dark purplish-brown of each side of the belly: the head horny, and dull reddish in colour, with a transverse band of dark greyish-brown across the face; legs and hinder part of anal segment a dull brownish-ochreous.

The cocoon is formed of brownish silk inside, slight but close in texture, and outside of fine particles of earth, and placed just below the surface; the pupa is stontish in front, tapering rapidly behind, ending in a stout spike with two fine points; in the male the wing cases short, and the antenna cases distinct, showing pectinations; the skin smooth and shining, reddish-brown in colour.—J. HELLINS, Exeter, July, 1871.

Description of the larva of Acidalia strigilata (prataria, Bdv.).—On the 28th of August, 1870, I received from my friend, Mr. J. P. Barrett, of Peckham, eight young larvæ of this insect, obtained from eggs deposited by moths captured by him during the previous month at Folkestone. They fed on *Polygonum aviculare* until autumn, when they began to hybernate, having attained the length of about three-quarters of an inch. At the beginning of April, not being able to procure knot-grass for them, dandelion was substituted, on which they at once commenced to feed, showing a preference for the withered leaves. By May 12th, the only larva I had left had reached an inch and a quarter in length, and on June 2nd, it being nearly full-grown, I took down the following description:—

Length: nearly an inch and a half, cylindrical, very slender, and tapering slightly towards the head. Head not notched on the crown, about as wide as, perhaps a little wider than, the second segment; the face slightly flattened, and the cheeks globular. Skin ribbed transversely, which gives it a rather rough, though uniform appearance.

The ground colour is grey, tinged with green; the head grey, faintly variegated with very pale brown. Of the longitudinal stripes, the most distinct is the narrow, dull green, medio-dorsal line; the sub-dorsal and spiracular lines are very inconspicuous, and seem to be composed of confused, waved, faint brown lines; spiracles very small, brown. On the centre of the back, and on the extreme anterior edge of the 6th, 7th, 8th, and 9th segments, is an intensely black square mark, divided into two distinct spots by the medio-dorsal line passing through the centre: slightly in front of each of these marks are two other equally black, but smaller dots, one being a little to the right, the other to the left, and placed at the posterior edge of the segments. The belly is pale greenish-grey, with a still paler central stripe, and on each side of this stripe are one or two very faint, pale brown, zigzag, longitudinal lines. In the middle of June it spun its cocoon (which was more firmly constructed than those of other species of the genus I have had) at the foot of the knot-grass on which it had been feeding.—GEO. T. PORRITT, Huddersfield, July 13th, 1871.

Re-occurrence of Aplasta ononaria at Folkestone.—I had the pleasure of taking *Aplasta ononaria* (a fine female) here on Monday last.—WM. PURDEY, 15, Grove Terrace, Folkestone, June 23rd, 1871.

Butalis cicadella at Weybridge.—On Saturday, the 1st July, I caught, I may say accidentally, an example of this exceedingly rare British species, on the heath near Weybridge Station. I believe specimens have been taken by Mr. S. Stevens, but I know not the locality. The original individual was taken at Brandon, Suffolk, many years since, by Mr. Dunning.—R. McLACHLAN, Lewisham, 10th July, 1871.

On the habits of the larva of Mycetobia pallipes, Meigen (Diptera).—I have several times found this larva under the bark of large fallen pine-trees, which have been infested by the larvæ of *Tomicus stenographus*. It is met with among the detritus and excrement left by these larvæ, and often in company with that of a *Xylota*, and of *Rhyphus fenestralis*. Without these larvæ the detritus would become dry; their presence turns it into a kind of mucilaginous paste in which they swim and wriggle. Lyonnet found the larva of the *Mycetobia* in the humid mould of willows, Léon Dufour in the morbid secretions of the ulcerated wounds of elms. I have myself found it in the wounds of pear and apple-trees produced by the caterpillars of *Zenzera asculi*. Thus one sees that it always lives under similar conditions, without regard to the kind of tree in which those conditions are realised.

When, being under the bark, it wishes to change to a pupa, it seeks the gallery of the *Tomicus*, and follows it until it arrives at the exit hole. Close to this hole, or sometimes in its interior, it undergoes its final change, so that the perfect insect, incapable of piercing the bark, finds an easy exit.—E. FERRIS ('Insectes du Pin Maritime,'—Diptères), in Ann. Soc. Ent. de France, 1870, pp. 188—189.

[We have extracted and translated the above interesting notice as an instance of the fact frequently observed in the habits of insects, that some species, without being actually parasites or carnivorous, are, nevertheless, dependent upon, or take advantage of others for their very existence. The part of the French Annals in which it occurs will henceforth be of historic interest. It purports to be the "deuxième et troisième trimestre," for 1870, and on the cover is dated 31st December, 1870. It arrived in London only during the month of June. The meetings of the Society have been held regularly, during all the troubles, in the house of the Assistant Librarian, M. Fallou, though we hear that often not more than five members were present.—Eds.]

Is the 'instinct' of bees ever at fault?—It is generally considered that one of the best proofs of the superior intelligence of bees is shown in the manner in which they find their hives or nests, though their 'business' may have led them immense distances from home. This evening, a circumstance occurred which leads me to imagine that, however great may be their appreciation of locality in its comparatively broad sense, they sometimes fail to unerringly remember exact spots. At 8 p.m. I observed an *Osmia*, evidently returning home after its day's work, angrily buzzing about my garden wall. I watched it for fully ten minutes, and during that time it entered all the crevices in the bricks or mortar for a space of at least three yards; going in and disappearing and immediately emerging. However, at last, it evidently found the right crevice, and was seen no more. Can its potations of nectar have had any effect upon it similar to that sometimes experienced by animals far higher in the scale when returning home late at night?—R. McLACHLAN, Lewisham, 16th July, 1871.

Law of Priority versus Accord.—Mr. Lewis' valuable paper on Scientific Nomenclature has produced supporters of the so-called "law" of priority, as endeavoured to be extended in the present day. The "law," as I have always hitherto understood it, is that, *when different individuals have described the same insect at different times under different names, the name first given shall have priority over all subsequent names*; but, like all laws that lay down a *general precept* only, it must be construed in the spirit in which it was made, which is, as I urge, only as a *means of determining a right to a name when there is no accord*.

I believe I am correct in stating that the "law" has hitherto, by common accord, been confined to names given since the binomial nomenclature, and to the "language" of "Entomological Latin,"—two points lost sight of by Mr. Kirby in suggesting *Gryllo-talpa*, Aristotle? and also, as I have always hitherto considered, as subservient to, and as a means of promoting, *accord*. If once it is to be held that the law is superior to accord, no such limits can be assigned to it. No final date of 1746, 1758, or 1767, as urged by Mr. Kirby, can be laid down as a starting point; for such a starting point could only be fixed by accord, and if once we say that the "law" is paramount to accord, under what authority could we find such a starting point? In such event, every insect *capable of identification* must henceforth carry the name under which it was first called—no matter by whom—no matter the language. The American fire-fly must bear its Indian appellation—the "Palmer worm" and "Canker worm" must have their "prior" names restored. We must carry the law back without limit—even to chaos itself—the only result of which would be that Entomological Nomenclature would soon resume its "lost ancestral form."

It must be remembered that this is not the *only* "law" now in use to promote accord; where the same person describes *different senses* of the same insect under different names, another "law" comes into operation—the entomological "jus mariti"—a "law" made to aid "accord" in cases where the "law" of priority cannot. I own that this "jus mariti" has recently been condemned by the dictum of an eminent "catalogologist," but as the dictum was only based upon a debatable theory, it has found few (if any) supporters. The whole scope and operation of these two laws—the "law" of priority and the "jus mariti"—clearly point that they were intended as special laws meant to make, not subvert, accord.

I look upon the *accord* of entomologists as a "law" of itself, governing and paramount to both these special "laws;" where there is want of accord we have resource to one of them to obtain that accord, *but, where accord exists already, I say that we have no right to call either law into operation*; they are not wanted, and I look upon the present resurrectional movements as a tortuous application of a useful law.

Mr. McLachlan, in answer to Mr. Lewis, says: "By applying his maxim '*communis error facit jus*, Mr. Lewis would draw a line and say, henceforward there shall be no change; whatever may be the errors, or however glaring and ridiculous they may prove in the sequel, from this time they shall pass uncorrected; nay, more, they shall no longer pass as errors, but as unimpeachable truths." Will Mr. Lewis' paper possibly bear a construction of this sort? *accord* is his dominant point; the proposition there laid down is, "*No name shall be received henceforth to the displacement of a universally recognised name.*" Both sides agree that the accord of entomologists is the *ultimate* desideratum, but the "resurrectionists" seem to consider that fishing out the most ancient name and repealing all the subsequent, is a better way of arriving at that result than by letting a name accepted by common consent stand, and abrogating the obsolete!! I hold, as I have before stated, that the "law" of priority is *not* that the *oldest* name of an insect is invariably its right one, as the resurrectionists now insist, but that, *in cases of dispute, the prior name is to be preferred*, and in such cases only; and that any attempt to subvert accord cannot be done under the "law" of priority, but we must make a new "law," the "*law*" of *antiquity*, say, were the scientific names created or evolved at the same time as the insects themselves; such a law might be useful as indicating the remoteness of their origin; but surely Mr. McLachlan will agree that there were more *real errors* in the infancy of the science than now. Mistaken information and limited observation naturally produced "errors" in nomenclature, or if not errors, objectionable names, which progressive science has since corrected or altered by common accord; and now we are asked to say that all the accord of entomologists shall never correct, alter, or vary any original name, whether right or wrong; that the original name shall be used, in many cases, to upset the corrected mistake, and *restore* the original pure, unadulterated "error"!!! Shall entomological science be progressive in everything except names? In most cases the name now in use is the far preferable one, having some more immediate relation to the creature's habits and mode of life, or *else the name now in use would never have been chosen by common consent*; for we cannot suppose that all the well-known names now condemned by the "resurrectionists" were chosen in *ignorance* of the prior name. They were, in many cases, chosen because it was more beneficial to

science that they should be chosen; and this choice by accord, this ancient usage of entomologists, which has been always acted upon to the present time, is now attacked and condemned, and we are told we *must* use the "prior" name, and no longer be allowed to use the name that those who have gone before us exercising their reason have preferred; is not *this* degrading to science?

M. Boisduval, commenting on the want of uniformity in English and Continental nomenclature, confines his observations to cases where the insects were "already described under other names, and were *well known by those names*." In such cases there was of course no accord, and they were very proper cases for the "law" of priority to determine.

Another point seems to have escaped the "resurrectionists:" if a name be sunk it follows that all dependent and derivative names ought to be sunk also. *Dictæa* appears in a recent list under the name *tremula*; what, then, shall we do with *Dictæoides*? If we changed it to *tremuloides* we should be met with the objection that *Dictæoides* was the "prior" name,—an example of the inextricable confusion we shall create by the resurrection-reading of the "law."*

Again, Linnæus himself, as Mr. Kirby states, repeatedly changed the names he had given—no matter his reasons for so doing,—possibly he considered the change a benefit to science; possibly as Linnæus' names, as he himself tells us, were "trivial," the change was purely arbitrary; but he changed them when the names were trivial, and mattered little, for trivial names cannot *injure* science as they can perpetuate no "error;" but now that science has progressed, and names are, as a rule, no longer trivial,† accord is not even to be allowed a choice. The "resurrectionists" will, of course, have to hold all Linnæus' later names as "errors,"—a conclusion certainly never contemplated by the great father of entomology.

Mr. Kirby is again unfortunate where he says, "if the 'law' of priority were rescinded no one would any longer take the trouble to identify any species he intended to describe as new, and we should soon have twenty new names for every old name which otherwise would have been restored." But no one has ever proposed that the law should be rescinded; Mr. Lewis' observations extend only to cases where common consent has accepted a more modern name; if there were twenty such names, where would the accord be? The "law" of priority would come into operation and decide the name, and the insect would go forth to the world in all the multitudinous modern books, and more multitudinous modern lists, under that name; if, then, it were discovered, after the lapse of an entomological "epoch," that the decision of the "law" of priority was in fact wrong, and that some ancient author, whose name few knew, had called the insect by a name which no one had ever heard, shall we be compelled to accept such obsolete name? and so multiply synonymy, by rendering it necessary to attach the *known name* as a *synonym* of the prior unknown, in all our future works, until the present generation, and their nomenclature with them, have passed into oblivion; or shall we not rather reply with

* As, when a name is superseded, it must be superseded, not only in one list, but in all, the followers of "Doubleday's list" will have to teach their children that *Notodonta Dictæoides* was so called because it resembled an insect that *never did exist*, that it was placed in a genus that gave it attributes it did *not possess*, and that it belonged to a group that resembles a group they did *not allow*.—T. H. B.

† Staudinger ignores several modern instances of Trivial Nomenclature, and says that such cases ought to be treated as if the insect *had never been named at all*; but such an "ipse dixit," without accord, is perfectly valueless, as different entomologists may hold different opinions on what constitutes the difference between a *scientific* and a *nonsense* name,—*Satyrus imbecille* is a no-sense name, *Mithymna imbecilla* purely scientific.—T. H. B.

Mr. Lewis, in the language of a celebrated statute, "*Nolumus nomina insectorum mutare quæ usitata sunt et approbata.*"—T. HENRY BRIGGS, Lincoln's Inn, July 12th 1871.

Systematic Zoology and Nomenclature.—The first requisite for the accurate discussion of any subject is an appropriate nomenclature. The great influence Linnæus exerted upon the progress of zoology is due to the universal acceptance of the binomial system, admirably adapted to bring order into the chaos of names of innumerable animals and plants previously known in each country simply by their vernacular names. In the hands of Linnæus it was the expression of vast erudition, the statement of the affinities of animals and plants, the formula for the classification of the organic world as he undertook it. In the hands of his followers and disciples it has become too often the end instead of the means; and, of late years, the laws requisite for the establishment of the correct name of an animal, or of a plant, have become often as difficult to establish as the most intricate legal question. The name of an animal or plant is that binomial combination which it has first received. Subsequent changes, such as the transfer to a different genus, are simple matters of registration. Unfortunately the writing of the authority after such a change is often considered as an honour by naturalists,* and much valuable time is lost in ransacking old books to find out incorrect combinations, which are subsequently corrected with great flourish of trumpets, as if this process advanced our knowledge of the affinities of the animals under discussion. No naturalist ignores wilfully what others have already done before him; it is generally from absolute impossibility to obtain the desired information; and if the question of nomenclature were generally regarded simply as a matter of registration, it would help to rid our systematic treatises of a mass of useless lumber. (The rules of nomenclature generally adopted are by no means satisfactory. The exceptions constantly taken to their application only increase the confusion; and the attempts made by the British Association to recommend a set of rules for the guidance of naturalists, have not been successful. The recent revision of those rules shows how impossible it is to lay down general instructions intended to be retrospective and prospective; to apply them to times of which the scientific spirit was so totally different from our own. *All that we can, with any justice, demand, is that the original name by which a species was first baptised, should be recognised to the exclusion of all others, if it be possible to determine this name with accuracy.*) •

The facility with which, in a new country, unknown animals can be described, and notoriety thus readily obtained, is a strong incentive to go on with descriptive work; not that I would, as is frequently done, deny all value to systematic zoology, but it should not be forgotten that the true purpose of systematic work must be to increase our knowledge of the relationship of animals of any special group already known, and serve in some way as a connecting-link in the chain of the various branches of zoology. Working in this spirit, systematic zoology helps us in our attempts to understand the laws of nature; these must remain unintelligible to him who is busy with naming and classifying materials, reducing his science to an art, merely accumulating facts to be stored in museums, forming, as it were, a library of nature. To him its laws will be as inexplicable as are the laws of the motions of planets to one who has no knowledge of the existence of gravitation.—ALEXANDER AGASSIZ, in the '*American Naturalist*' for August, 1871 (*abstracted*).

* This remark refers more particularly to a practice much in vogue amongst some American naturalists, but which is happily of rare occurrence with those of Europe. The species is attributed by them to the author who transferred it to its present genus, and not to the original describer.—*Eds.*

ON INVOLUNTARY MIGRATION IN INSECTS.

BY F. BUCHANAN WHITE, M.D.

In the second part of the Transactions of the Entomological Society for 1871, Mr. Albert Müller gives an interesting paper on the effects of atmospheric agencies in the dispersal of non-migratory insects, and brings together many records of insects having been found on Alpine snow, which he aptly terms the wreck-chart of the atmosphere, "spread out for those who will read it."

I have lately had an opportunity of studying some cases of involuntary migration of insects through atmospheric agencies. One, in which the migration had just taken place, and in which the result, at least of the majority of insects that fell under observation, was death; and another, in which the migration seems to have taken place at a more distant period, and in which the result would appear to have been an alteration in the habitat, food plant and habits of the insects.

The first case came under the observation of Dr. Sharp and myself, during a recent visit to Benmucdhu. Near the summit of that mountain, and at about 4,000 feet elevation, were some large patches of snow, which, on examination, were found to be thickly strewn with insects, no less than six orders being represented. It is worthy of note that none of the hill-insects proper were found, though both *Anarta melanopa* and *Psodos coracina* occurred on the mountain—the former both at a greater, and at a less, elevation than the snow fields.

Probably, to use Dr. Sharp's words, they knew better; that is to say, they, by their habits, guard against any involuntary migration, by sheltering themselves from the wind under the rocks and stones. That *Psodos* is especially cautious we saw, on a windy day, on another hill, where, though the moth was tolerably common, not a specimen could be seen, except by turning over stones, under which the insects had taken refuge.

Before passing on to the second case, I shall briefly notice the principal insects found by us on the snow fields.

In *Coleoptera*: *Notiophilus biguttatus*, *Acidota crenata*, not uncommon; these two alone of all the insects were at all lively. *Bryoporus rugipennis*, *Arpedium brachypterum*, *Oxytelus tetracaratus*, *Homalota eremita*, *Mycetoporus tenuis*(?), *Philonthus marginatus*, *Salpingus ater*, *Hylastes ater*, *Hylurgus piniperda*, *Telephorus elongatus*, *Sericosomus brunneus*, *Aphodius lapponum*, *Coccinella ocellata*, *obliterata*, *hieroglyphica* (in great abundance, and an entirely black variety not common), and *variabilis*.

In *Hymenoptera*: a species of *Nematus*, and several *Ichneumons*.

In *Neuroptera*: several *Trichoptera*, belonging to the genus *Limnophilus*, and one of the *Perlidae*.

In *Hemiptera*: *Heterocordylus tibialis*, *Gastrodes ferrugineus*, a *Salda*, which escaped, *Iassus fruticola*, &c.

In *Lepidoptera*: *Arctia plantaginis*, five or six, all ♀, *Eupithecia nanata* and *callunaria*, *Penthina* sp., *Phoxopteryx biarcuana*, *Retinia cosmophorana* and *coniferana*, *Pyrausta purpuralis*, *Herbula cespitalis*, *Gelechia ericetella*, *G. longicornis*, &c., &c.

In *Diptera*: several *Tipulæ*, one of which is, I think, *excisa*, Schum., a *Bibio*, and several *Syrphi*.

Altogether there were about fifty species of insects on the snow.

The subject of the second case of involuntary migration is *Eremocoris erratica* (*Hemiptera-Heteroptera*), a species which, according to "British Hemiptera," is usually "taken singly, by beating juniper-bushes," but which, in at least one instance, has been found more gregariously under dead leaves; this, however, at a time of the year (April) when the individuals in question may still have been in winter quarters. I have found this bug, though rarely, upon both juniper and pine; and believing it to be entirely confined to these two plants, it was with some astonishment that I saw it living in small companies, below stones on the bare and treeless summit of Mòr Shròn, and far away from either juniper or pine.

At first I thought that the mountain insect might be a different species from the pine one, but I find that it is identical; and, till my visit to Benmucdhu, I could not understand how the *Eremocoris* came to be found under such different circumstances. After seeing, however, the great number of insects displayed on the "wreck charts" of that mountain, I have begun to think that we have here an instance of involuntary migration, which has resulted in the establishment of a colony of insects, with habits modified to suit their changed circumstances. Thus, instead of being dwellers in the valley, they have become dwellers on the mountain; instead of inhabiting trees or bushes, they live under stones; and instead of deriving their sustenance from species of *Conifera*, they feed upon (I think) *Empetrum* or *Calluna*. That the insects in question are not, like the Benmucdhu specimens, recent emigrants, is sufficiently shown, I think, by the fact that all stages—larvæ, pupæ, and perfect insects—are to be found under the stones on Mòr Shròn; and that they are not voluntary migrants is probable from the circumstance that in the interval between the pine woods and the summit of the mountains, no specimens have been found.

Under such a mode of life the occurrence of some variation would not have been wonderful ; but, as I said before, the mountain insect and the pine one appear to be absolutely identical.

Braemar, July.

ON A *CECIDOMYIA* FORMING GALLS ON *PTERIS AQUILINA*.

BY ALBERT MÜLLER, F.L.S.

While the list given by Bremi (Beitrag zu einer Monographie der Gallmücken, p. 62) shows that almost every family of plants furnishes sustenance to the larvæ of gall-midges, the ferns have hitherto been conspicuous by their absence from the list ; and for this very reason I have generally neglected their examination, acting on the erroneous notion that, if others found nothing, it was of no use for me to go over barren ground. So thoroughly had this error biassed my mind, that when, in 1867, my late friend, Mr. Armistead, of Leeds, sent to me specimens of rolled leaflets of the frond of the common bracken, without a trace of insect life, I was willing to call the roller anything rather than a *Cecidomyia*. Hence I only alluded to these productions in the "Zoologist," 1868, p. 1201, as follows : "Leaflets discoloured, 'either reddish or black, rolled up or otherwise distorted. 'Are very 'common here, Allonby, Cumberland.' W. A. in litt. August 9th, '1867."

But, since then, *Filices* have been examined by me on every possible occasion, and discoveries by others, to which I shall allude on their completion, have lately increased my interest in the work ; and the reward has come. A stroll up to Shirley on Sunday last to a favourite spot of mine, near the Archbishop's palings, will be fixed in my memory as being the occasion of finding reddish, fourteen-jointed larvæ of a *Cecidomyia*, each snugly ensconced in the rolled and laid down leaflets of fronds of *Pteris aquilina*. Often, the majority of the leaflets of a frond are thus tenanted each by one larva. The affected leaflet is at first neatly folded, or laid down lengthways on the under-side of the leaf, in which state it is pale green ; subsequently it becomes a cigar-shaped roll of reddish colour, and at last it resembles nothing so much as a black pudding in miniature. The latter stage signifies that the larva has left it to undergo its metamorphosis underground ; at all events, I have examined scores of these black rolls without meeting any pupal skins. To the best of my knowledge, no gall-midge has as yet been detected on the bracken ; and, although I anticipate that some eye-

tematic friends will grumble, I prefer to abide by father Linné's axiom, "*sine nomine perit cognitio rei*;" so I propose for this gall-midge the name of *Cecidomyia pteridis*, on the following grounds:—

1. Its mode of life singles it out from all its numerous allies.
2. Experience in numerous analogous cases, therefore, warrants my calling it a species new to science.
3. Descriptions from caught midges, without any record of their lives, being practically useless, are, therefore, generally slighted by the field naturalist.

South Norwood, 16th September, 1871.

BITTACUS APTERUS, NOV. SP.

BY B. M' LAURLAN, F.L.S.

Some time since, my friend Dr. Hagen made to me the startling announcement, in one of his letters, that an apterous species of *Bittacus*, the singular tipuliform genus of *Panorpidæ*, had been recently discovered in California. Within the last few days the announcement has been followed by the liberal present of two pairs of that most extraordinary insect, accompanied by the request that I would immediately describe it, which I now proceed to do. My first impulse was to look for some character which might possibly be considered as of generic value; but the insect appears to me to present no one structure that would warrant such a generic separation; for I cannot regard the absence of wings as sufficient in itself to necessitate the placing of it in a special genus. This absence of organs of flight is most complete in both sexes, there not being even an indication of the slightest rudiments, which one would certainly expect to find, taking into consideration the ample wings of all the other species.

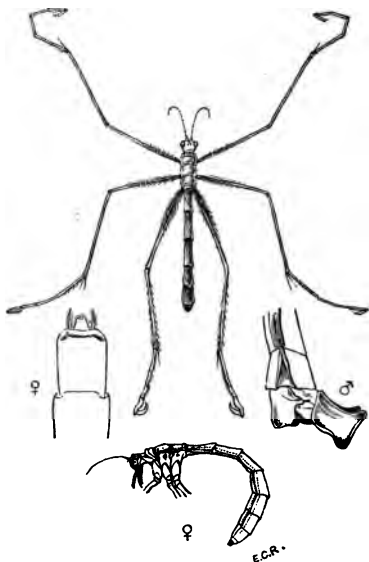
BITTACUS APTERUS, n. sp.

Rufa-griseus (vividus, viridescens), apterus. Rostrum linea nigra utrinque signatum. Pedes pallidiores, femoribus tibiisque setis nigris parce instructis; tarsis infuscatis, subtus setis nigris dense instructis. Abdomen obscurior, lineis geminatis, nigris, sub-obsolete, utrinque signatum. Appendices ♂ magnæ, foliaceæ, truncatæ, sursum directæ, margine apicali antice producto: penis recurvatus, infra appendices situs. Abdomen ♀ in processu duo spiniformes breves desinens.

Long. corp. ♂ 10''' (=21 mill.); ♀ 10½''' (=22 mill.).

Habitat: California.

♂. Head and thoracic segments above clear reddish-testaceous; eyes black; ocelli shining, the median one surmounted by a short, black, setiform spine, directed forwards; antennæ short, the two basal joints stout, the thread very fine, furnished with short hairs in the apical portion; rostrum with a blackish line on each side; and there is also a faint, fuscous, geminate line on each side of the head, behind the eyes; palpi clothed with short blackish hairs. On the anterior margin of the pronotum are three small blackish tubercles on each side, and on the posterior margin one on each side; legs reddish-testaceous, the coxæ paler, yellowish, a short blackish line on each trochanter internally; femora and tibiæ furnished with sparse, short, black setæ, apex of tibiæ blackish; tarsi thickly set beneath with black setæ, infusate, second joint of the thickened posterior tarsi blackish in its basal two-thirds, third joint with a broad sub-medial blackish ring; abdomen reddish-grey, paler beneath the lateral membrane between the dorsal and ventral surfaces, grey; the first and second (second and third ?) segments sub-cylindrical, the second slightly the longer, third to sixth stouter, clothed with very fine and short grey pubescence visible under a strong lens; on each side of the abdomen are short, geminate, very indistinct, blackish lines; terminal segment furnished with a pair of very large, foliaceous, yellow appendices, directed upwards nearly at right angles with the dorsum of the abdomen; in form each appendice is irregularly oblong, concave internally, superior margin strongly excised, the inferior slightly sinuate, the apical margin sharply truncate, the superior angle being obtusely produced; the last ventral segment, beneath the appendices, supports the base of the penis, which is strong, upwardly-curved, with the apical portion gradually attenuated to a point, and directed back again, so as almost to touch the base. On each flank of this segment is a very minute palpiform appendice, situated close to the angle formed near its articulation with the small upper plate to which the large foliaceous appendices are attached.



Bittacus apterus, M'L.

♀. The colours much as in the ♂; the pronotum would seem to have two tubercles on each side of the posterior margin, instead of one. The posterior tarsi are not in part blackish. The abdomen is laterally broader, decreasing towards base and apex; the apex is furnished with two short, straight, spiniform, hairy appendices, between which is a broad, short lobe, deeply excised at the apex, and below this lobe is a short, obtuse organ, which is probably the ovipositor.

The discovery of this anomalous creature is due to Mr. Wm. Holden, of Charlestown, Massachusetts. His account of the locality and habits is as follows:—"Taken the last of April, 1871, at Brooklyn, Alameda Co., California, in a pasture. All the specimens (about 60) were captured in an area of 15 to 20 feet, under a live oak tree in a patch of thistle and wild mustard. They were most active just after sunset and sunrise, crawling about the stalks of the thistle and mustard, feeding on flies and other small insects. When the plants were shaken they instantly dropped to the ground, and concealed themselves in the grass. The colours when alive were brighter, the *green* resembling that of the plants on which they were found, so that it was not easy to distinguish them unless in motion. Their movements were slow and singularly awkward. Several specimens were taken *in coitû*. I examined many similar patches of thistle and mustard, but never found a specimen except in this one place."

I would here observe that there is no indication of *green* colouring in the alcoholised individuals before me, though one can readily suppose that a greenish-grey tint existed when living. In conclusion, I remark that Dr. Hagen informs me that the same gentleman found, probably in company with the *Bittacus*, males of a semi-apterous species of *Tipula*, a suggestive fact in these days of investigation of "protective resemblances."

My colleague, Mr. Rye, has kindly furnished me with the (slightly magnified) drawings illustrating this paper.

Lewisham: September, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 8).

BY H. W. BATES, F.Z.S.

Genus EGA.

Castelnau, Etudes Entom., p. 93.

Distinguished from *Chalybe* by the head being very convex above, and constricted behind into a narrow distinct neck. The terminal joint of the palpi is much enlarged, with an abruptly-formed membranous tip, mistaken by the author of the genus for the fourth joint, as in the *Bembidiinæ*. I cannot confirm Lacordaire's statement that the emargination of the mentum is toothed; the emargination is semi-circular and simple

The species hitherto described are very closely allied, and difficult to be discriminated; the two following, however, are very distinct.

EGA NODICOLLIS, n. sp.—*Parva, minus elongata, testaceo-rufa, nitida, setis longis sparsis instructa; capite citius quam in E. formicaria pone oculos constricto, antennarum articulis 1—4, nec non 8—11, albo-testaceis, 5—7 fuscis; thorace medio sub-globoso, antice posticeque angustato, juxta basin fortiter constricto; elytris oblongis, sulco transverso, prope suturam interrupto, leviter impressis, æqualiter sulcatis, interstitiis punctulatis, utrinque disco omnino nigro-æneo, macula humerali rufescenti, alteraque transversa postica albo-testacea; pedibus flavo-testaceis.* Long. $1\frac{1}{2}$ lin. 1 exempl.

St. Paulo, Upper Amazon.

EGA BILOBA, n. sp.—*Parva, minus elongata, cupreo-ferruginea, nitida; capite mox pone oculos constricto; antennis robustissimis, moniliformibus, articulis 1—4 nec non 8—11 testaceo-albis, 5—8 nigris; thorace ovato, medio sulco profundo basin haud attingenti, in lobos duos diviso; elytris breviter oblongis, sulco transverso profundo, prope suturam interrupto, signatis; suprâ cupreo-fuscis, æqualiter sulcatis, interstitiis angustis, utrinque maculis duabus parvis, rotundatis, discoidalibus, testaceo-albis (quarum una ante, altera pone, medium) notatis; pedibus testaceo-albis, rufescenti-variegatis.* Long. $1\frac{1}{2}$ lin.

Banks of the Tapajos, at Santarem, running under dead leaves.

Genus APORESTHUS, nov. gen.

Corpus sub-depressum, glabrum. Caput ovatum. Antennæ filiformes, articulis 4—11 dense pubescentibus. Labrum antice truncatum, angulis rectis. Mandibulæ angustæ, elongatæ, apice leviter falciformes. Maxillæ angustæ, intus sparsim spinulosæ, lobo exteriori æqualiter bi-articulato. Palpi omnes elongati, graciles, nudi, articulo ultimo sublineari, precedenti sub-æquali. Ligula elongata, angusta, antice sinuato-truncata, bisetosa, angulis truncatis, liberis; paraglossis angustis brevior. Mentum angustum, sub-æqualiter, acute trilobum. Thorax parvus, cordatus. Elytra ovata, sub-depressa, apice late truncata; stria marginali per apicem continuata. Pedes graciles, vix setosi; tarsi lineares, supra nudi, unguiculis simplicibus; maris articulis 3 anticis vix dilatatis, subtus bi-seriatim squamulosis. Epimera mesothoracica angusta, parallela, coxas haud attingentia.

The genus is distinct from the *Coptoderinæ*, *Lebiinæ*, and allied groups by the paraglossæ being non-adherent to the upper angles of the ligula. In the form of head and trophi it has much resemblance to *Diplo-harpus* (*Anchomeninæ*), but the form of the mentum and other parts of the mouth, added to the truncated elytra, seem to point to the *Odacanthinæ* as its approximate position.

APORESTHUS ANOMALUS, n. sp.—*Nigro-piceus, nitidus, partibus oris ar-*

ticulisque 3 basalibus antennarum rufo-testaceis, pedibus flavo-testaceis; elytris leviter æneo-tinctis, marginibus basalibus et lateribus explanatis testaceis, supra æqualiter striatis, interstitiis planis. Long. $2\frac{1}{2}$ lin.

Rio Janeiro. Taken by the late Mr. Squires.

Genus LOXANDREUS.

Leconte, Journ. Acad. Nat. Sci. Phil., New Ser., ii, p. 252 (1852).

Chaudoir, Rev. et Mag. Zool., 1868, p. 342.

This perfectly natural and well defined genus of the *Feronia* group has undeservedly shared the fate of the numerous loosely characterized divisions of this great assemblage, and been set aside as a synonym without sufficient examination. In Gemminger and von Harold's catalogue it has been fused, apparently at a random guess, with *Argutor*.

The following are its generic characters:—

Dilated joints of anterior tarsi of the ♂ cordiform, oblique, *i. e.*, inner anterior angles advanced.

Elytra without abbreviated scutellar stria, and with a single large puncture on the 3rd interstice.

Posterior tarsi grooved on each side.

Metathoracic episterna elongated.

Mentum with central tooth entire, obtuse at apex.

The absence of an abbreviated scutellar stria, and the presence of a single large puncture on the 3rd interstice, although apparently trivial characters, are important from their constancy throughout the long series of species of which the genus is composed. The elytra are remarkable also for the silky iridescent gloss with which they are, in the great majority of the species, adorned.

The *Loxandri* are of much slighter build than the *Feroniæ*, and in this respect remind one rather of the *Calathi*. They are most nearly allied to *Abacetus*, differing in the oblique anterior tarsi of the ♂, and in the thoracic foveæ not forming simple, sharp sulci. The head is of oval form, with moderately prominent eyes and short frontal foveæ; the thorax has a single, deep, and broad fovea on each side of the base. In habits they resemble the *Calathi*, living gregariously under heaps of dead leaves and sediment. They are peculiar to the tropical and warmer regions of the earth, and are the only representatives of the great *Feronia* group which I met with in the region of the Amazons.

Leconte and Chaudoir have described 19 species; but several de-

scribed by authors as *Feronia*, *Argutor*, &c., belong to the genus, such as *F. postica* and *irina* (Brullé Voy. de D'Orbigny), *F. confusa* (Dej. Sp.), and others.

The following species appear to be as yet undescribed :—

LOXANDRUS SULCATUS, n. sp.—*Elongato-ellipticus*, *nigerrimus*, *thorace elytrisque læte iridescentibus*, *antennis, palpis, tarsisque rufo-piceis*; *thorace sub-quadrato, elytris multo angustiori, ante medium paululum rotundato-dilatato, angulis posticis obtusis sed distinctis, supra lineâ dorsali fortiter impresso, basi punctato utrinque foveâ elongatâ profundâ signato*; *elytris punctulato-sulcatis*; *subtus sternis omnibus abdominisque basi punctatis*.

Long. $5\frac{1}{2}$ lin. ♂ ♀.

Of more slender form than *Pacilus cupreus* (Auct.), with narrower and longer thorax; which is very gradually and slightly narrowed posteriorly, with obtuse hind angles. Colour a deep glossy black, with strong iridescent gloss on the thorax as well as on the elytra. The latter are sharply sulcated with a neat row of punctures in the bottom of the sulci.

Ega; under rotting leaves in the forest.

LOXANDRUS POLITISSIMUS, n. sp.—*Elongato-ellipticus*, *niger nitidissimus, supra splendide iridescens*; *antennarum articulis duobus basalibus, palpis, labro, tarsisque rufis*; *thorace elytris multo angustiori, medio rotundato-dilatato, postice sinuato-angustato, angulis posticis prominulis, supra basi sparsim punctato utrinque foveâ elongatâ profundâ impresso*; *elytris fortiter striatis, striarum fundis punctulatis*; *subtus sternis omnibus abdominisque basi punctatis*.

Long. $4\frac{1}{4}$ lin. ♀.

A species remarkable for the intensity of its gloss and iridescence. It is further distinguished from the three following, which it much resembles, by the base of the thorax being punctured up to the hind angles. The thorax is considerably narrowed behind, and sinuate near the posterior angles, which are prominent and acute at the tip.

Ega.

LOXANDRUS LÆVICOLLIS, n. sp.—*Elongato-ellipticus*, *nigerrimus, politus, elytris sub-iridescentibus, palpis tarsisque fulvis, antennis ad basin piceo-rufis*; *thorace sub-quadrato, elytris angustiori, lateribus paululum rotundatis, postice gradatim leviter angustato, angulis posticis sub-rectis, haud prominulis, supra totidem impunctato, basi utrinque fovea elongata impresso*; *elytris punctato-striatis*; *subtus mesosterni episternis antice punctulatis*. Long. $4\frac{1}{4}$ lin. ♂.

The thorax is nearly square, the sides being very slightly rounded, and the base quite free from punctures.

Rio Janeiro.

LOXANDRUS CALATHOIDES, n. sp.—*Elongato-ellipticus, nigerrimus, læte iridescens, labro, palpis, antennarum basi, tarsisque piceo-rufis; thorace sub-quadrato, ad basin elytris paulo angustiori, lateribus paululum rotundatis, angulis posticis sub-obtusis, haud prominulis, suprâ totidem lævi, basi utrinque foveâ elongatâ profundâ impresso; elytris profunde striatis, striarum fundis subtiliter punctulatis; subtus mesosterni episternis punctatis.*

Long. 4½ lin. ♂.

Very closely allied to *L. lævicollis*, differing chiefly in the conspicuously broader thorax, not perceptibly narrowed behind, and in the deeper elytral striæ.

Rio Janeiro.

LOXANDRUS FULVICORNIS, n. sp.—*Elongato-ellipticus, nigerrimus, politus, suprâ iridescens, antennis, labro, palpis, tarsisque piceo-fulvis, pedibus piceis; thorace elytris angustiori, sub-quadrato, postice paululum angustato, angulis posticis prominulis, sub-rectis, suprâ basi utrinque foveâ elongatâ, profundâ, grosse punctatâ impresso, juxta angulos posticos impunctato; elytris punctulato-striatis, interstitiis sub-planis, apicem versus angustis, convexis.*

Long. 4½ lin. ♂.

The elytra in this species are rather less deeply-striated, but the striæ are punctulated as in *L. politissimus*, the striæ becoming much deeper and the interstices more convex towards the apex.

Ega.

LOXANDRUS XANTHOPUS, n. sp.—*Minor, elongato-oblongus, piceo niger, sub-iridescens, labro, palpis, antennarum basi, pedibusque testaceo-flavis; thorace elytris multo angustiori, antice rotundato-dilatato, postice sinuato-angustato, angulis posticis prominulis, rectis, marginibus reflexis rufo-piceis, suprâ basi utrinque foveâ elongatâ, profundâ, intus plagiatim punctata, impresso; elytris profunde simpliciter striatis; subtus metasterno solùm grosse sparsim punctato.*

Long. 3—3½ lin. ♂ ♀.

Differs from all the preceding species in its less elliptical and more oblong general form, and in its pitchy colour, with the flattened reflexed margins of the thorax, and the suture of its elytra behind more or less pallid-piceous. The thorax is very distinctly narrowed behind, and sinuated before the hind angles, which are prominent and pointed. The punctures at the base of the thorax are confined to a patch on the inner side and at the bottom of the deeply sulcated fovea.

Generally distributed throughout the Amazons, and common.

Kentish Town: September, 1871.

Occurrence in Britain of Hylastes hederæ, Schmidt.—To this species must be attributed the insect, of the economy of which an interesting account was published by my friend Dr. T. Algernon Chapman, at p. 199 of vol. v of this Magazine, under the name of *Hylurgus pilosus*. I am personally responsible for the error in the name, for which I can only account by the fact that all the few British (supposed) types of *H. pilosus* seen by me are also to be referred to Schmidt's species above mentioned: I have, indeed, only recently seen the true *H. pilosus* of Ratzeburg, of which Mr. R. Lawson has sent me a few specimens, taken by him under the impression that they were *Polygraphus pubescens* (which they considerably resemble), under fir-bark, near Scarborough, about a month ago. We, therefore, include both species on our list; and, as will be seen, two genera not before recorded as British must apparently be used for their reception. These are *Cissophagus* (script. *Kissophagus*) and *Xylechinus*, recently characterised by Chapuis, at pp. 34 and 36 of his "Synopsis des Scolytides." In *Cissophagus*, formed for the reception of *H. hederæ*, Schmidt (Ent. fragm., Stettin. Ent. Zeit., iv, p. 109), the funiculus of the antennæ is six-jointed, the third joint of the tarsi is distinctly bi-lobed, and the mentum is rotundate-ovate at the base; whereas in *Xylechinus*, which includes only *H. pilosus*, Ratz. (Forstins., Käf., p. 178, T. vii, 4),—removed by Chapuis from *Carpoborus*, Eichhoff (not *Carpoborus*, as De Marseul spells it),—the funiculus is only five-jointed, the third joint of the tarsi is simply cordate, and the mentum is cordiform. Other characters are pointed out by the author, but these are sufficient for the present purpose. Schmidt, in describing his *H. hederæ*, describes it as having a seven-jointed funiculus, but he evidently includes the scape in that term; and Redtenbacher and Thomson erroneously attribute six joints to the funiculus of *pilosus* (Bach, Käferfauna, ii, p. 114, however, gives the right number). Thomson also departs from his usual accuracy in stating the tibiæ of *pilosus* to be armed with "*denticulis pluribus*;" they are triangularly dilated, and armed at the apex with usually only two (rarely three) large recurved teeth, and there is only an indication of one other denticle at some little distance above these. In *hederæ*, the tibiæ are less triangularly dilated, having about six denticles in the lower half. The antennæ are stouter and shorter in *pilosus*, with very short and broad funicular joints, which are almost merged in the club, and a very stout and short scape. Compared as simply species, *C. hederæ* is lighter in color, not quite so elongate, and having the elytra more abruptly rounded behind; its thorax is shorter, broader, slightly constricted before the apex, and clothed with broader, squamiform, depressed pubescence, which does not form so evident a dorsal ridge as in *pilosus*; the individual punctures of the striae of its elytra are more cleanly defined, and the erect setæ on the interstices are much stouter and longer, the squamiform pubescence also being thicker. In *X. pilosus*, moreover, the suture is more or less evidently clothed with greyish pubescence, and the whole insect resembles one of the smaller true *Hylastes*, such as *H. obscurus* (two continental types of which are labelled *H. hederæ* in the national collection).—E. C. RYE, 10, Lower Park Field, Putney, S.W., September, 1871.

Note on Geotrupes stercorarius, Linn.—Thomson (Skand. Col., x, p. 330) refers *putridarius*, Esch., Er., to this species as a synonym, and re-names the *stercorarius* of Erichson (nec Linn.) *mesoleius*, from a new character which he has recorded for it, in the freedom from pubescence of the middle of its abdominal segments (a cha-

raacter which it may be remembered has been used also by Dr. Sharp in defining the distinctions of *G. vernalis* and *G. pyrenæus*). The chief comparative characters for the two species are as follows:—

G. stercorarius: elytra with the striæ not so well defined, and not quite so closely punctured, and with the interstices slightly convex; mandibles externally with only one slightly undulated emargination before the apex; apical teeth of the anterior tibiæ in ♀ not so large or sharp; segments of the abdomen equally pilose beneath. I have observed that, in a series, this species is the brighter of the two.

In the ♂ (in which, as usual, the thorax is larger than in the ♀) the posterior femora have a small, sharp tubercle near the base, beneath, on the hinder margin; the hind trochanters are produced to a point; and the front tibiæ beneath have a simple keel running near the front margin.

G. mesoleius: striæ of elytra better defined (though those between shoulder and suture are, as a rule, not so widely impressed at the base), more closely and cleanly punctured, with flatter interstices; the thorax often punctulate; each of the mandibles externally with two sinuous emarginations; apical teeth of front tibiæ in ♀ sharper and longer; segments of the abdomen almost hairless in the middle beneath.

In the ♂ the tubercle at the base of the posterior femora becomes a strong and almost hooked tooth, and the hinder trochanters are produced into a hook at the apex; the keel of the front tibiæ also is more medial, and is tuberculate at the base.

The species seem equally common here. I have very small varieties of *mesoleius*.—ID.

Weevil-galls on Linaria vulgaris.—Early in August last, Mr. C. G. Barrett found at Brandon, in Suffolk, several clusters of galls on the roots of the yellow toad-flax. The plant was growing on a light, sandy soil, and the galls were an inch or two below the surface. They are about the size of small peas, monothalamous, of a yellowish-white color, generally growing in clusters, two contiguous galls frequently becoming confluent. Out of several galls I cut open on August 26th, two contained white larvæ, and ten others perfect insects, the latter varying in color (according to the length of time since they had assumed their perfect state). The name of the weevil (for which I am indebted to Mr. Rye) is *Gymnetron linariæ*, Panz., the larva of which, according to Kirby and Spence, is said by Hammer-schmidt to reside in galls on this plant. I have seen this gall before, but I do not remember from what locality I received it.—H. W. KIDD, Godalming, August 29th, 1871.

[The œconomy of this species is mentioned by Gyllenhal, Schnizlein, Panzer, Bach, Kaltenbach, and Brisout; and has quite recently been fully discussed by Rupertsberger, in the last vol. (xx) of the Verhandl. Zool. bot. Gesellsch., Wien, p. 839. Perris (L'Abeille, vii, p. 36), noticing Kaltenbach's statement that the allied *G. antirrhini* (not yet found in this country) also lives on *Linaria vulgaris*, states that the species now usually known by that name lives in the capsules of different species of *Verbascum* (especially *V. phlomoides*). He considers that Paykull's original statement of the habitat is wrong, or that the modern *G. antirrhini* is erroneously named. If it be rightly named, the difference in œconomy of two closely allied species seems remarkable.—E. O. R.]

Nematus Vallisnerii, Hartig, ovipositing under difficulties.—It would hardly be worth while to mention that I noticed a ♀ of this common species deposit her eggs into the extremity of a succulent young shoot of *Salix fragilis*, at 11 o'clock a.m., on the 28th May last, were it not that the act took place under unusual conditions. The extremity of the shoot in question was formed by the normal incipient wrapped-up bunch of silky and tender leaflets; but the whole bunch was so closely beset with a cluster of apterous green *Aphidæ*, with white longitudinal stripes, that it astonished me to see the saw-fly select it. I watched her as she came leisurely crawling over the live studding of the shoot, probing with her antennæ the few interstices. Vexed at the tickling caused by the feet of the intruder, the *Aphidæ* took to their usual means of defence—jerking their bodies, and freely discharging their liquid,—they behaved as if some ally of *Allotria victrix* had come amongst them for a sinister purpose. But my little innocent friend was not to be scared away by such unfriendly demonstrations. I saw her raise herself stiffly on her legs, standing on the living and moving pavement, and slowly drive her saw home into the tissue of the bunch of leaflets below. Gradually her body approached nearer to those of the *Aphidæ* around, and at last its pressure crowded them out of their positions, until I could see the tip of her abdomen rest on the surface of the bunch of leaflets, while her deflexed limbs still kept their hold on the bodies of her neighbours, which were all this time doing their best to get rid of her. For a quarter of an hour she remained in this apparently uncomfortable position, then she gradually raised herself up on her living cushions, and when the saw was fully withdrawn, she crawled away from the cluster of spiteful suckers, and halting at a clear spot on the twig, she went through a thorough process of cleansing: first the fore feet brushed her antennæ repeatedly, then the third pair was drawn over the wings to remove the sticky liquid squirted over them, then the legs themselves were subjected to the same treatment. At last I thought she was really too fond of her toilette, so my rude fingers closed upon her, and, indoors, I just made sure it was the well-known *Nematus Vallisnerii*, before I set her free again. Another point I have ascertained by this observation is, that the eggs are all laid in one batch, into different leaflets of the leading shoot, before they expand and grow apart; and that the subsequent appearance of rows of galls on different leaves of the same twig, is, therefore, the result of one operation.—ALBERT MÜLLER, South Norwood, S.E., August 19th, 1871.

Is the 'instinct' of bees ever at fault?—In reply to Mr. McLachlan's note on this subject, in your last number, "would he be surprised to hear" that the country bee-keepers near here say that bees are blind to things close to them, and consequently have to take aim from a distance when flying to any particular object? If this theory be correct, the apparently strange conduct of the *Osmia*, noticed by Mr. McLachlan, may have been caused neither by "too potent libations of nectar" nor by "a fault of instinct," as he suggests, but merely by the defective vision of the insect in question.—A. E. HUDD, Bristol, September, 1871.

[Admitting the country bee-keepers to be right, would it be sound to argue on *Osmia* from *Apis*? But any one who has seen a hive-bee flying straight from one to another flower on the same branch, must disbelieve the idea of defective vision in that insect.—EDS.]

Notes on British Hemiptera.—In a recent expedition to Cornwall and Devonshire I found specimens of the following two species of *Hemiptera*, which may be worth recording in your Magazine :—

Cydnus nigrinus, Fab. (*Æthus lævis*, D. and S.) tolerably plentiful under *Erodium* and stones, in the north-western part of Whitsand Bay, the locality where it was found some years ago by Mr. Dale. I have carefully compared the specimens I took with continental ones of *nigrinus*, and find that the only difference discernible is a rather greater convexity in those from Cornwall. Both foreign and English specimens appear to be very variable, especially in the punctuation of the thorax, but the spots of the membrane are almost identical in both. I mention this, as it is one of the characters given by Messrs. Douglas and Scott to distinguish *nigrinus* and *lævis*. The question of the generic name to be used is, no doubt, a difficult one; but the fact that Fabricius begins his genus *Cydnus* with two species of what is called *Æthus* by Mr. Dallas, tends to show that he had *Æthus* in his mind rather than *Brachypelta*, for which genus Mr. Dallas retains the Fabrician name. Besides this, *Brachypelta* has the apical margin of the corium curved, and in this respect it stands alone in the genus *Cydnus*, as employed by Fabricius.

Dieuches luscus: I found this pretty insect in three localities, four specimens among stones, by the side of a little stream in Kynance Cove, near the Lizard, one larva in Whitsand Bay, with the *Cydnus*, and seven specimens at the roots of grass, &c., near Teignmouth, Devonshire; in the last locality I found a pair of *Henestaris laticeps*.—EDWARD SAUNDERS, Hillfield, Reigate, 13th September, 1871.

Note on Crambus alpinellus, Hübner, a species new to Britain.—My friend, Mr. Howard Vaughan, has just shown me two examples of *Crambus alpinellus*, which were taken by Mr. Moncreaff at Southsea; these agree perfectly with specimens of the insect in my collection, received some years ago from Professor Zeller.

Alpinellus (which, I presume, was named on the principle of "*lucus a non lucendo*," since Zeller remarks "*in alpibus nunquam inventus est*") is most nearly related to our *cerusellus*, though it is not in the least like that pygmy. It may be described as, for a *Crambus*, Phoxopterygiform; of an ashy brown colour, with a white, longitudinal, middle streak. This streak sends out a branch towards the inner margin before the middle of the wing; beyond the middle it is intersected by an obliquely placed mark of the ground colour; towards the apical margin there is a strongly angulated zig-zag line.

The species inhabits sandy, grassy spots, especially in fir woods. It is on the wing in July and August.

I am informed that this very distinct *Crambus* had been returned to Mr. Moncreaff as *geniculeus*. Staudinger, very properly, places about 70 species between them, and Zeller at least a hundred.—H. G. KNAGGS, Kentish Town, 12th September, 1871.

Vanessa Antiopa near Norwich.—On the 29th of August, about nine miles from Norwich, I saw a specimen of *Vanessa Antiopa* seated on the bole of a *Cossus*-eaten alder tree, and feeding on the sap exuding from the burrows, but it flew away swiftly on my attempting to approach it, and did not return that day.

As the insect was sitting with its wings extended, so as to give me an excellent view of it, there could be no mistake as to the species.—F. D. WHEELER, Chester Place, St. Giles' Road, Norwich.

Pieris Daphidice and *Deiopeia pulchella* near Brighton.—A large specimen of *P. Daphidice* was caught at Bevingdean, near Brighton, on the 27th August last. The insect is in good condition, with the exception of a slight chip on the hind margin of one of the fore-wings.

On Monday last, a ♀ specimen of *D. pulchella* was taken in a stubble-field near the Brighton Race Course, and was brought to me alive, a few hours afterwards, by its fortunate captor. I have had the pleasure of adding both insects to my collection.—H. Goss, Brighton, September 16th, 1871.

Deiopeia pulchella at Hove and Brighton.—On the 4th, about 10.15 a.m., I was fortunate enough to take a very fine specimen of *D. pulchella*, in a stubble-field, in Hove.

On the 11th a somewhat worn specimen was taken about 3 o'clock, p.m., on the Race Hill, by Mr. Gorringer, of Richmond Buildings, who showed it to me alive last night.—T. W. WOLFORD, Hon. Sec. Brighton and Sussex Nat. Hist. Society, 38, Buckingham Place, Brighton, September 12th, 1871.

Deiopeia pulchella near Erith.—A fine specimen of *Deiopeia pulchella* was taken on Monday last by a little girl, and brought to me before its wings had quite stiffened. It was caught in a field close to my house.—J. G. WOOD, Belvedere, S.E., September 16th, 1871.

Deiopeia pulchella at Bournemouth.—This morning I saw a *Deiopeia pulchella* flying briskly in the sunshine. It settled for a minute near to me, so that I saw it distinctly, then arose and flew over the steep cliff, where I could not pursue it, and, indeed, I had little chance of capturing it with a sweeping-net.—J. W. DOUGLAS, Bournemouth, 11th September, 1871.

Deiopeia pulchella near Bristol.—A male specimen of this rare insect, in very good condition, was taken on the 10th inst. by my mother, in a garden at Bishopston, near Bristol.—J. B. JARVIS, Hill Cottage, Brixton Hill, S.W., 20th Sept., 1871.

Deiopeia pulchella near Manchester.—I possess a female of this rare insect, in good condition, captured on the 8th inst., in the Railway Coal-yard at Middleton Station, by a workman, who boxed it from mere curiosity, attracted by its beauty.—JOHN THORPE, Church Street, Middleton, Manchester, 19th Sept., 1871.

Leucania albipuncta near Exeter.—On the 23rd of August I captured at sugar, in my orchard, a very perfect specimen of *Leucania albipuncta*. Its ally, *lithargyria*, is a very common insect with me, and I had this season closely examined a great many of them before the former made its appearance. The clean, white spot on the wings immediately attracted my attention, and this, together with the smaller size, and darker upper-wings, unmistakeably distinguishes it from *lithargyria*; in other points also it quite corresponds with Guenée's description.—H. D'ORVILLE, Alphington, near Exeter, September 11th, 1871.

Sphinx convolvuli near Exeter.—I last night captured *S. convolvuli* at my Petunia bed.—ID.

Sphinx convolvuli at South Shields.—I received from a friend a large specimen of this noble moth, which was found floating in the Tyne near the Mill Dam landing. The insect was very lively when it reached me, but is unfit for the cabinet in consequence of having been handled.—CHRIST. EALLES, Grace Street, Catherine Street, South Shields, September 13th, 1871.

Larvæ of Deilephila galii, &c., at Brighton.—I have been so fortunate as to take 18 larvæ of *D. galii*, and 70 of *C. porcellus* near here this season. Those of *Acherontia Atropos* are also common.—W. EDWARDS, 18, Bosses Gardens, Brighton, 19th August, 1871.

Singular variety of Argynnis Aglaia.—While on an excursion upon the Norfolk Broads, during the latter part of last July, I found *Argynnis Aglaia* abundantly in one small marshy field, flying about thistle-heads, &c., and am informed by the "natives" that it occurs there every year.

I have recorded this both because *Aglaia* is of exceedingly rare occurrence in Norfolk—if, indeed, it be recorded from that county at all,—and because among the captures is a var. so distinct and beautiful as to deserve special notice.

On the upper-side nearly all the usual markings are obliterated, with the exception of those which cross the discoidal cell, of which the double bar, or irregular oblong ring, nearest the base, is present, as is the broad bar nearest the hind margin, but not the narrow mark, which, in *Aglaia*, crosses the cell between the other two. The two short, black bars or square blotches in the central area of the fore-wing of *Aglaia*, immediately below the discoidal cell, are faintly indicated; the series of round spots, crossing both fore and hind-wings, parallel to hind margin, is represented in the fore-wing by a row of obscure, cloudy blotches, forming a faint brown fascia: on the hind-wing two of the spots are visible near the anal angle, the others are absorbed in a broad, deep-black fascia crossing the (hind) wing, parallel to hind margin. Inside this fascia is the fulvous ground colour, marked with a distinct and broad, but irregular, black ring, instead of the black clouding which occupies the base of the hind-wings of *Aglaia*.

All the nervures (or wing rays) are conspicuously powdered with black, so as to form a series of black streaks bordering the hind margin of all the wings, where the ordinary lunules are entirely absent.

These streaks are especially distinct toward the apical angle of the fore-wings, and on the hind-wings, where they extend from the black fascia to the hind margin.

The general appearance is that the basal and central markings are absent, or almost imperceptible, while those of the hind margin are enormously exaggerated and extended toward the centre.

The under-side agrees far more nearly with Haworth's var. *Charlotta* than with *Aglaia*; the large, basal, silvery blotches of that var. are present, but the central row of silver markings is represented only by four small spots, while the apical row is extended into a series of seven large, oval spots, about half the size of the basal blotches.—F. D. WHEELER, Chester Place, St. Giles' Road, Norwich, Aug., 1871.

Capture of Noctua sobrina and other Lepidoptera at Rannoch.—My brother and I visited this most productive hunting ground again this summer, about the middle of August, and had the pleasure of taking another specimen of *N. sobrina*, together with the following rather local species:—

E. Blandina, *C. Davus*, *D. obfuscula*, *T. pinetaria*, *L. olivata*, *M. rubiginata* (var. *plumbata*); *C. munitata*, *C. testata*, *C. populata*, *C. imbutata*, *X. rurea*, (var. *combusta*), *C. graminis*, *C. Haworthii*, *A. porphyrea*, *N. glareosa*, *N. confusa*, *N. Dahlii*, *N. neglecta*, *O. suspecta*, *E. viminalis*, *A. occulta*, *A. tincta*, *H. adusta*, *C. solidaginis*, *P. interrogationis*, *S. anomala*, *A. alpina*, *M. margaritellus*.

I may also mention that from some larvæ taken last year about Camachgouran, I have reared, amongst other common species, one of each of the following : *T. cratægi*, *S. illustraria*, and *F. conspicuata*.—THOMAS HUTCHINSON, Grantsfield, Leominster, 9th September, 1871.

Captures of Lepidoptera at Rannoch.—During my stay of six months at the above locality I managed to take *Dasydia obfuscata*, *Psodos trepidaria*, *Cidaria reticulata*, *Fidonia pinetaria*, *Coremia munitata*, *Noctua sobrina*, *Tæniocampa gothicina*, *Aplecta occulta*, *Hadena rectilinea*, *Anarta melanopa*, *Scopula alpinalis*, *Scoparia alpina*, *Crambus ericellus*, *C. myellus*, *S. irriguana*, and many other, all of which have been handed over to Mr. E. G. Meek, who employed me to collect.—J. WARINGTON, September 11th, 1871.

Notes on the Lepidoptera of South Wales.—As very little appears to be known about the *Lepidoptera* of South Wales, notes on some of the species noticed, during a few days' visit in the middle of June, this year, may interest the readers of the E. M. M. For obvious reasons I have not mentioned the exact localities; but all the species named in my list were taken in sub-province 16 of Mr. Jenner Fust's paper on "Distribution," though many of them have not been previously recorded from that district. It will be seen that some rather good things have "turned up."

L. Acis: of this rare species I was fortunate in capturing six specimens, four of which were in first-rate condition. I kept one pair on the chance of obtaining ova, but did not succeed.

The male is a handsome insect on the wing, somewhat resembling a blue var. of the female *Alexis*, though it is more richly coloured; but I do not think anyone, after once seeing it on the wing, would let *Acis* pass unrecognised. It is extremely local, and I do not wonder at its not having been oftener met with. If once its few remaining localities be known, I am afraid it will very soon become extinct. The cause of its rarity in this country is, I have no doubt, to be found in the fact that the ova and young larvæ are destroyed by the haymakers.

Zygæna loniceræ and *filipendulæ*, *Lithosia mesomella*, *Ephyra porata*, *punctaria*, and one fine ♀ *orbicularia*, *Macaria notata* and *alternata* (one fine specimen of the latter), *Lomaspilis marginata*, *Emmelesia affinitata* and *decolorata*, *Eupithecia custigata*, and *Euclidia glyphica*, all occurred on the wing, and of *Chesias obliquaria*, we took both larvæ and perfect insects at the same time and place.

Sugar did not produce much on the only evening I had a chance of trying it. *Miana furuncula*, *Grammesia trilinea* (var. *bilinea*), and *Rusina tenebrosa*, were the only *Noctuæ* that took the bait.

C. duplaris was not uncommon on the wing, but seemed to ignore the supper that we had prepared for it.

I returned home from my first entomological trip to Wales, very well satisfied with my captures. Should any enterprising collector chose to thoroughly work west and central Wales, he will, depend upon it, be rewarded by adding some interesting novelties to our lists. The country which has of late years produced *Xylina conformis* and *Eromene ocellæa*, must have other good things in store for future workers. What have become of *Mniophila cineraria* and *Valeria oleagina*, both of which are said to have been taken in Wales?—ALFRED E. HUDD, Stapleton Lodge, Bristol, 14th September, 1871.

Depressaria Douglasella bred.—When at Witherslack, at the middle of May, I found a fine grass-green larva feeding on the radical leaves of *Campanula rotundifolia*; it spun up in due course, and produced *Dep. Douglasella*.—J. B. HODGKINSON, 15, Spring Bank, Preston, August 6th, 1871.

[In the Entomologist's Annual for 1855, p. 52, we are informed that Mr. Boyd bred a specimen of this species from a larva found on one of the *Umbelliferae*.—EDS.]

Depressaria Weirella bred in plenty.—I have bred upwards of 200 of this species from larvæ collected on *Anthriscus sylvestris*: few collections seem to possess this insect.—ID.

Anarsia genistæ bred.—When at Morecambe, on the 30th of May, I collected a number of larvæ on *Genista tinctoria* (a plant which I had never examined at that season, though I have collected for 35 years). I am happy to say that I have been rewarded by breeding a dozen fine specimens of *Anarsia genistæ*.—ID.

Natural History of Xylina furciferæ (conformis).—I have lately had the great gratification of rearing this rare British species from the egg, and have figured the larva at various periods of its growth. The eggs were obtained from moths captured in Wales by a kind friend, who generously shared his good luck with myself and others.

Six moths were captured in October, 1870, and were kept together in confinement through the winter, and towards the end of February, and the beginning of March, 1871, eggs were laid by one of the females; but the time of pairing was not observed.

The larvæ began to hatch on April 17th, the last of them appearing on the 30th. They fed on alder, *Alnus glutinosa*, and those that lived so long were full-grown from 11th to 17th of June; but a great many died off after their last moult, and I fancied that, in the case of the larvæ which I fed myself, this mishap was caused by the alder leaves being smothered with the secretion of the *Aphides*, which thickly swarmed on them. The pupa-state lasted till August; the first moth of which I have any record appearing on the 7th of that month, and the last on the 17th.

The egg is small for the size of the moth, globular in shape, the shell thin, with about thirty fine ribs, and irregularly reticulated between them; the colour, at first, a pale straw-yellow, afterwards a dingy pinkish, and lastly a dull purplish-brown, assimilating well with the rough specks on the alder bark.

The larva escapes by an irregular hole in the side of the egg, and at first is of a pale drab tint, and semi-translucent, with the alimentary canal showing as an internal green stripe. At first, and for three weeks of its life, it lives and feeds within the hollows between the ribs of the partially-expanded young alder leaves, by degrees, as it feeds and grows, becoming more opaque, and greenish in tint. When about a fortnight old, the colour is pellucid green, and distinct, whitish, longitudinal lines appear. In another week, the colour is a full, bright green, and the lines whitish-yellow. At the end of the month, the length attained is fully half-an-inch; the colouring now is at its brightest, the ground being a rich velvety full green, and the lines and tubercular dots bright sulphur-yellow. After this the growth is more rapid, and the colours become paler; when about three-quarters of an inch long,

the colour is olive-brown, and the lines and dots pale yellow, namely, a dorsal stripe of uniform width, a sub-dorsal stripe rather broader, a fine, wavy line between this and a narrow sub-spiracular line, the tubercular dots arranged in threes on either side the dorsal stripe. At the end of about six or seven weeks, the final moult occurs, when the larva is about an inch in length, and with this moult the ground-colour becomes olive-green, and there come some black markings, giving an effect very different from that of the former stages; and I may observe that it was just at this time that the great mortality occurred, the larvæ, which hitherto had seemed to be doing well, now dying off one after another.

When full-grown, the length is an inch and a half, the figure rather stout in proportion, and cylindrical, except that the head is a trifle narrower than the second segment, which, with the third, also tapers slightly forwards, and that the thirteenth is tapered to the end; the head is full and rounded at the sides; the tubercular dot furnished with very small, fine hairs; the skin smooth and velvety. The ground-colour is olive-brown, with a slight trace of green in it, particularly on the back, the sides and belly rather paler, having somewhat of a pinkish tinge; the pale yellow dorsal stripe is interrupted by a deep, blackish, freckled patch of the ground-colour, just at the beginning of each segment, which, by its extension backwards on either side, forms the dark boundary of more than half of a blunt diamond-shape of blackish freckles, the area within showing the yellow dorsal stripe but faintly, this dark freckling, with a deeper suffusion of ground-colour, forms a bar across the back from the hinder tubercular yellow dot on one side to that on the other, the part behind remaining to complete this irregular diamond-shape is but faintly freckled, and there, at the end of the segment, the pale yellow dorsal stripe, shows bright and unclouded; on all the segments, from the hinder tubercular dot, runs a thick black streak, a little downwards and forwards into the sub-dorsal pale yellow stripe, which it extinguishes at that part nearly up to the segmental division, or, in some instances, opens a little at one or at each end, so as to allow the yellow stripe to appear. The side, for about half way or more down, is rather paler than the back then comes a very fine, rather wavy, yellowish line, broken a little in character by black atoms that make its edges appear ragged; the thin sub-spiracular line is similar at a little distance below, the interval being a little deeper in colour than the side, and much freckled with deeper olive-brown; the belly and legs are rather paler and a little tinged with olive-pinkish, and bear some few freckles of yellow and olive, sprinkled just above the ventral legs, these last are tipped with pinkish-brown; the tubercular dots are all pale yellow, and distinct, and are delicately ringed with black, as are also the oval, dirty-whitish spiracles; the head is olive-brown, freckled and reticulated with darker brown; the slightly more shining second segment is, on the back, adorned with two pairs of yellow dots.

When the larva ceases to feed, its habit is to retire into moss, or, if it does not find this, it will fold up a leaf, or else fasten a leaf loosely to the surface of the soil, and there spin an oval cocoon, three-quarters of an inch long, of whitish silk, close, but semi-transparent, and closely adhering to the surrounding substances.

The pupa has no striking peculiarity, being thick in proportion, a little over five-eighths of an inch long; the thorax, wing, leg, and antennæ cases finely corrugated, and the abdominal segments rather smooth, terminating in a hooked

point, by which it is firmly attached to one end of the cocoon; its colour dark brown, the incisions of the segments brownish-red, and the whole surface shining.—WM. BUCKLER, Emsworth, *September 11th, 1871.*

Natural history of Aspilates gilvaria.—I owe to the kindness of Mr. A. H. Jones the supply of eggs, which enabled me to follow out the transformations of this species, after previous failures. On several former occasions I had reared larvæ to half-growth, and then lost them, for want, as I supposed, of knowing the right food to give them; and now, after this more successful attempt, I am still unable to speak with certainty about the food, whether there is any one plant to which the larva is more attached than to any others.

I received the eggs on August 31st, 1869; larvæ hatched on Sept. 12th: they attained a length of not quite $\frac{1}{2}$ inch before hybernation, having fed on *Thymus serpyllum*, *Achillea millefolium*, *Potentilla reptans*, and *Medicago lupulina*. I kept them outdoors, and on Christmas eve, as I was moving their flowerpot, a large one 10 inches across and full of earth, to an open shed, I let it fall from a height of about three feet to the ground, where it broke to pieces, and its contents, earth and the plants on which the larvæ had fed, lay scattered over about a square yard of the gravel path. Luckily I did not lose my temper, but—Mark Tapley-like, feeling quite jolly under the circumstances—I quietly got together all the earth and plants, sweeping the path clean with a soft brush; and bringing all the mixture indoors, I spread it thinly over two large newspapers on the floor of my room; I next scattered a handful or two of blades of grass over the surface, arranged a cordon of grass all round the edges, and then left things to settle down. In the course of the evening, some three or four hours after, I got away from the Christmas family party, and lighting a short candle, lay down on the floor of my room, to examine the blades of grass; and in this way, much to my delight, I recovered 12 *gilvaria* out of about 15, besides all 4 larvæ of *Gnophos obscurata*, which had shared their food and fortunes. I now re-planted their food in another pot, and turned them on to it again, apparently none the worse for their adventure. However, in the early spring many of them died off, and I was afraid I should once more have to record a failure, but, fortunately, when the pining sickness had done its worst, there remained 3 larvæ in good health; these began to feed again, and now chose, and finally fed up on, *Veronica serpyllifolia*, a plant or two of which had by chance grown up in their flowerpot; but for a long time they made little growth, for on May 14th, 1870, I find it noted that they were still very small; after that date the growth was more rapid, and in June they moulted; about the end of June they moulted again for the last time, and during July fed up to full growth; early in August they changed to pupæ, and the first moth came out on August 19th.

The egg of *gilvaria*, like those of others of the genus, is long brick-shaped, not ribbed, but pitted in rows from end to end, the little pits being irregular in size; the colour at first yellowish-green, afterwards reddish. I have notes of two batches, in one of which the eggs were deposited touching one another end to end in a long string, but in the other somewhat *en échelon*, each egg overlapping about one-third of the length of its neighbour, as they were placed in a slanting row.

The newly-hatched larva is very pale brown on the back and belly with a dark brown sub-dorsal line, and a whitish stripe along the spiracles. When the larva is

about one-third of an inch long, its colour is for the most part pale ochreous, the back showing paler, with a fine dorsal line of brown; there is also a brown sub-dorsal line, followed at an interval by a broader purplish-brown stripe. After this, when the larva begins to grow, the ochreous tint becomes colder, and so continues till after the last moult.

When full grown, the length is about one and a quarter inches, the figure rather slender, cylindrical, being stoutest at the tenth segment, and thence tapering almost imperceptibly to the head, which is nearly as wide as the second segment, and is flattened and narrowed a little in front; anal flap ending in two short points, whilst from under it projects a pair of longer and more slender points, slightly curved inwards, and projecting quite one-sixteenth of an inch; the skin smooth, but transversely wrinkled on the hinder part of each segment, and along the spiracles; the larva, when handled, feels tough and stiff. Although the general colouring is pale ochreous, yet there are several lines and stripes to be distinguished, and the difficulty is to speak of these with sufficient clearness, and at the same time not give too strong an idea of them. The ground colour pale greyish-ochreous, with a pinkish tinge along the sides; a broad paler stripe down the back, having a brownish-dark line through its middle, most distinct on the front segments, and being edged with a fine brown line; a broad, pale, greyish-buff sub-dorsal stripe, beginning on the head, and continued to the extremity of the anal points, bordered above by a fine brown line; next a broad lateral stripe (or band) sprinkled closely with brown freckles, and bearing two fine pale lines, the lower of which is whitish throughout the four last segments, and on the hinder part of each of the others; then the pale, puffed, spiracular ridge bearing the reddish-yellow spiracles ringed with brown; under the ridge, just beneath each spiracle, is a longitudinal dark brown dash; belly greyish-ochreous with two faint dusky lines; the usual dots wide apart, blackish in colour; the lateral band ceases on the front of the thirteenth segment, leaving the anal flap and the long points pale.

One of my larvæ was rather darker than the others, with the ground of the back browner, and the lateral band formed of purplish-brown freckles and specks; but even the darkest looked cold-tinted and pale.

When at rest, the larva remains stretched out at full length, but curls up the front segments when disturbed, and, if further annoyed, drops from its food, and curls its whole body up tightly in the same plane, bringing the anal legs and flap tightly down on the inner coil, and in this position will allow itself to be trundled like a wheel. When about to change, it takes advantage of some small insterstice between two bits of earth, or sticks or stones, and, spinning a few threads, draws some small, loose particles together to hide the opening. The pupa is long and slender; the head, wing cases, and last segment of the abdomen, are very dark, shining brown; the rest of the abdomen of a pale tint of warm red-brown, with spots and transverse streaks of the darker colour.—J. HELLINS, Exeter, July, 1871.

Success of the American Moth Trap.—About a fortnight ago I determined to give my "American Moth Trap" a trial, especially as I had at the time the pleasure of the company of my friend Mr. W. F. Wheeler, who was anxious to see how it worked.

Well, we concealed it in an alder copse till dark, while we collected and sugared, and when darkness came on we mounted the "trap" on a convenient stump, lighted and left it.

Till nine o'clock nothing came, but soon after, on looking, I found no less than six or seven *Phibalapterys lignata* scampering up the inside glass. A few sharp puffs of breath drove these into the drawer where they were secured by the glass slide, and we again left it. Before the evening closed we trapped some more *lignata*, one *Pterophorus isodactylus*, and two or three common species, such as *Hydrocampa nymphæalis*, &c.—C. G. BARRETT, Norwich, September 16th, 1871.

Review.

TRANSACTIONS OF THE NORFOLK AND NORWICH NATURALIST'S SOCIETY, 1870-71, 8vo., pp. 1—92.—Norwich, 1871.

Last year we had the pleasure of noticing the first part of "Transactions" (vol. vii, p. 21) published by this flourishing local Society. The volume now before us contains matters of more than local interest. Though ornithology seems decidedly the strong point in the studies of the members, all branches of natural history are fairly represented. The entomological paper is by our valued correspondent Mr. Barrett, on coast insects found inland. Mr. Barrett's views on this subject are already known to the readers of this magazine. His observations are very valuable, but we think Mr. Barrett argues too much from local facts. Many of our coast insects are known to continental entomologists as inhabitants of the plains of central Germany, where they find the conditions which with us, in the majority of cases, apparently only exist on the shores. With reference to the President's remarks as to the existence of seals in the inland seas of Asia, we would remind him that marine *Crustacea* exist in some of the fresh-water lakes of Norway, identical in species with those found on the shores, and only slightly modified by their long sojourn in fresh-water; and that, on the other hand, the mighty rivers of tropical Asia and tropical America are inhabited by many species of the smaller *Cetacea*, which carefully keep in the upper part of the rivers, away from the influence of the ocean. The existence of seals and dolphins inland is only surprising because both have become associated in our minds with marine conditions.

A paper of general interest is that by Prof. Alfred Newton, on a mode of keeping a Natural History Register, with lithographed specimen. It is, of course, the journal of an ornithologist, but combined with daily meteorological observations, too complicated for the entomologist; yet the latter might take some useful hints from it.

DESCRIPTION OF NEW SPECIES OF AFRICAN DIURNAL LEPIDOPTERA.

BY CHRISTOPHER WARD.

(Continued from page 82).

EURYPHENE PORPHYRION, n. s.

- ♂. *Upper-side*: fore-wing dark rufous-brown, with the base black, and inner margin marked with red, within the cell two large black spots, beyond the cell, an irregular line of black continued down to the inner margin, and beyond the

middle a small white spot ; a line of black following the outer margin. Hind-wing : base black and containing a red spot, centre of wing with a broad band of red ; outer margin dark rufous-brown, edged on the inner-side with black.

Under-side : light rufous-brown, with base and outer margin darker ; fore-wing with three spots in the cell bordered with black ; apex greyish-white, a black line following the outer margin : hind-wing with three spots near the base, bordered with black, a line of black following the outer margin, edged on the outer-side with grey, and on the inner-side with an indistinct band of grey spots.

♀ : resembles male, wings more elongated, the hind-wing more broadly marked with red, and the colors generally lighter.

Expanse, male, $2\frac{3}{16}$; female, 3 inches.

Habitat : Camaroons.

HARMA CYCLADES, n. s.

♂. *Upper-side* : both wings bright, light rufous-brown ; fore-wing, base rather darker, upper and outer margin narrowly edged with dark brown, within the outer margin a band of seven minute black spots. Hind-wing : base brown, a band of darker brown crossing vertically midway, darkest at the anal angle (this band is slightly continued into the fore-wing) ; outer margin brown, edged on the inner-side with a narrow, waved band of black.

Under-side : both wings tawny brown ; fore-wing with three spots of darker brown bordered with black, one within the cell, one below, and one beyond it : hind-wing with two similar spots near the base, a narrow line of darker brown following the outer margin ; both wings crossed midway with a narrow line of brown.

Expanse, 3 inches.

Habitat : Camaroons.

HARMA CAPELLA, n. s.

♂. *Upper-side* : fore-wing, light tawny-brown, base darker brown and slightly marked with waved lines of black ; outer margin brown, bordered on the inner-side with an irregular waved band of black ; within, a second band of brown lunular markings : hind-wing, light tawny-brown, base and inner margin broadly marked with brown, outer margin brown, with an inner band of black lunules ; a band of brown crossing vertically midway from anal angle to centre of wing, near the base several waved lines of black.

Under-side : light brown, both wings crossed vertically midway by a black line, with the outer-side darker brown, and on the inner-side spots of lighter brown bordered with black ; within the cell of fore-wing a spot bordered with black, below and beyond the cell a similar spot ; both wings with a sub-marginal band of small black spots.

Expanse, $2\frac{1}{2}$ inches.

Habitat : Camaroons.

HARMA CICERONIS, n. s.

♀. *Upper-side* : dark brown, both wings crossed midway by a white band, which

broadens inwardly at the anterior margin of fore-wing; outer margin of both wings with a band of white spots, edged inwardly with black lunule markings, within, a second band of white spots, lunular on the fore-wing, rounded on the hind-wing; cell of the fore-wing crossed with waved lines of black.

Under-side: pale green, central band and white spots as above, but more indistinct; within the cell of fore-wing an oval spot bordered with black, below this a small circular spot, and near the base of hind-wing several indistinct spots bordered with black. Expanse, $2\frac{1}{2}$ inches.

Habitat: Camaroons.

Resembles *Harma Æmilius*, but quite distinct. Also in the collection of Mr. W. C. Hewitson.

HARMA CYRIADES, n. s.

Upper-side: yellowish-white; fore-wing, apex brown, outer margin bordered with brown, with small indistinct spots of white, and edged on the inner-side with darker brown: hind-wing, inner margin and anal angle broadly marked with brown, outer margin brown as on fore-wing, but with the white spots and inner band of dark brown more clearly defined.

Under-side: yellowish-white, both wings crossed midway with a line of brown, beyond the cell of fore-wing waved lines of dark brown, within the cell an oval spot bordered with black, below, a small circular spot; near the base of hind-wing two small spots bordered with black. Expanse, 2 inches.

Habitat: Camaroons, and Cape Coast Castle.

CHARAXES HADRIANUS, n. s.

Upper-side: both wings white; fore-wing, base deep red, continued midway into the cell, apical half of wing black, beyond the cell two spots of white, and above these, near anterior margin, two smaller white spots, near the outer margin a curved band of five white spots, the two lowest the largest, a small white spot near the anal angle: hind-wing, base grey, outer margin edged with black, and on the inner-side a narrow band of seven elongated black spots, the upper one and the two lowest are the largest; two short black tails.

Under-side: white; fore-wing, base greyish-white, and apical half a lustrous-grey, a large oval spot of deep red near the anal angle: hind-wing crossed vertically midway by a red band, edged on the inner-side with black, outer margin with a band of small black spots. Expanse, $3\frac{1}{2}$ inches.

Habitat: Camaroons.

The colouring of this fine species is remarkable, as occurring in the African group of *Charaxes*. It resembles the Eastern types, as represented by *C. Delphis*, &c.

CHARAXES PAPHIANUS, n. s.

Upper-side: bright-rufous brown; fore-wing, apex and hinder margin black, two

black spots within the hinder margin, beyond the cell an oval spot bordered with black: hind-wing with one tail, this and the outer margin edged with brown, a line of small, black spots following the outer margin.

Under-side: pale lustrous-brown, both wings crossed diagonally with a narrow band of darker brown, edged on the inner-side with grey; within the cell of fore-wing two small spots bordered with brown; near the base and crossing the cell numerous lines of brown, edged with grey. Expanse, 2½ inches.

Habitat: Camaroons.

PAPILIO ANDRONICUS, n. s.

♂. *Upper-side*: dark brown; fore-wing crossed diagonally to the end of the cell by a clear white band, broken by the nervures, deeply indented on both sides, and narrowing towards the apex; a white spot near the apex: hind-wing with a band of similar color, broader, not broken, and on the outer-side grey; outer margin of both wings slightly edged with white.

Under-side: fore-wing brown, darker within the cell and anterior margin: hind-wing rufous brown, base broadly marked with orange-red, nervures dark brown; a white band crossing both wings as on the upper-side, broader on the fore-wing, and narrower on the hind-wing. Expanse, 4½ inches.

Habitat: Camaroons.

Allied to *Papilio Zenobius*; but differs in the straight margin of the white band crossing the hind-wing (especially on the under-side), the absence of any detached markings between the nervures near the base, and the much clearer white of the band.

NEPTIS BIAFRA, n. s.

♂. *Upper-side*: both wings brown-black; fore-wing, the cell crossed by three diagonal white marks, the outer one the largest, the inner one near the base the smallest; beyond the cell three parallel, horizontal, white streaks, the upper one the smallest, below, midway, two clear, oval, white spots: hind-wing, crossed midway by a broad band of white, this band is also continued slightly into the fore-wing; fringe of both wings white, following the outer margin of both wings four white bands, the first (from the margin) very narrow, second rather broader, third broad, especially on the hind-wing, fourth narrow and rather undulating on the hind-wing.

Under-side: resembles upper-side, with the white markings generally broader.

Expanse, 2¾ inches.

Habitat: Camaroons.

ATELLA MANORO, n. s.

♂. Wings angular. *Upper-side*: both wings bright rufous-brown, darkest at the base: fore-wing, outer margin and apex bordered with dark brown, continued round the anterior margin and narrowing towards the base; within the cell a small oval spot bordered with dark brown, at the extremity of the cell a dark brown patch; near the apex three small red spots placed as a triangle;

hind-wing with a similar marginal band, containing at the anal angle a narrow line of red; both wings with small brown spots on the inner-side of the marginal band.

Under-side: brown; fore-wing, the cell crossed by three elongated spots, the outer one red, edged with dark brown, the centre and inner one silvery-grey, edged with brown; beyond the cell and at the anal angle a patch of silver-grey; apex with a small spot of silver: hind-wing with a patch of silver-grey at the anal angle; both wings crossed diagonally by a line of silver, edged on the inner-side with dark brown; a narrow waved line of dark brown following the outer margin of both wings.

Expanse, 2 inches.

Habitat: Madagascar.

EREBIA PASSANDAVA, n. s.

Upper-side: both wings deep purple-black, darkest round the outer margin.

Under-side: dark brown, rather lighter at the outer margin, which is edged by a narrow line of black; at the apex of fore-wing two ocelli nearly confluent, both black with white eye, the upper one very small; near anal angle of hind-wing a larger ocellus, black, edged with rufous-brown, and a small white eye, above this, following the outer margin, three minute ocelli, white, edged with black.

Expanse, $1\frac{9}{10}$ inches.

Habitat: Madagascar.

MYCALESIS ANGANAVO, n. s.

Upper-side: brown; fore-wing with an ocellus midway near outer margin, black, bordered with red, and with a white eye: hind-wing with a small ocellus of similar colors near the anal angle; outer margin bordered with lighter brown, containing a narrow line of dark brown.

Under-side: brown, with numerous waved markings, outer margin broadly bordered with lighter brown; ocelli as on upper-side.

Expanse, 2 inches.

Habitat: Madagascar.

Halifax: September, 1871.

ON THE EMBRYONIC LARVÆ OF BUTTERFLIES.

BY SAMUEL H. SCUDDER (OF BOSTON, U. S. A.).

In their papers on various species of British *Macro-Lepidoptera*, Messrs. Hellins and Buckler furnish us with much better accounts of the external appearance of caterpillars than can be gained from the meagre and superficial descriptions which used to be thought sufficient; and, as they have not confined their descriptions to the full grown animals, but have followed the creatures through all their moults, they have, in several cases, incidentally shown how great a difference there is between the larva just hatched and the full grown caterpillar; especially in the case of some of the *Rhopalocera* thus treated by them. Mr. Riley, of America, has, in one or two instances, recorded similar facts.

It is the purpose of the present communication to point out the probable universality of this law—that caterpillars of butterflies present greater structural differences between the embryonic and adult stages of the same individual, than are to be found in the adult larvæ of allied genera. By the term “embryonic,” I designate those caterpillars which have not changed their condition since leaving the egg, a stage in which they generally continue but one or two days. Some of the changes alluded to are more or less gradual in their appearance, but they generally occur at the first moulting of the caterpillar.

All the instances given are drawn from New England butterflies, and the generic terms employed are those used in my list, published in the Proceedings of the Boston Society of Natural History. If any one is sceptical in regard to the facts adduced, I can enter more into detail upon doubtful points. It should also be premised, that in studying caterpillars, the shape and sculpturing of the head, the form of certain segments, and especially the precise number, location and disposition of the spines, thorns, and hair-emitting warts of the body, will be found to furnish abundant means of distinguishing the most closely allied and minutely sub-divided genera. But to our examples.

In the genus *Satyrus*, the body of the young larva is furnished with exceedingly long, scarcely tapering, compressed hairs, geniculate a little beyond the base, serrulate above, and generally directed backwards; those, however, which occur on the upper portion of the thoracic segments are directed forward, and thus present a very peculiar contrast. Nothing of this sort appears on the mature larva, which is represented by Boisduval and Le Conte as quite smooth, but which is probably uniformly clothed with very short hairs.

In the genus *Hipparchia*, the young larva is born with a head of equal height and breadth, furnished with prominent lateral and frontal warts. The body has four pairs of longitudinal rows of tubercles definitely disposed, each tubercle bearing a short, straight, delicately clubbed bristle. The head of the mature larva, on the other hand, bears no lateral or frontal warts, but either half is prolonged upwards into a conical horn as long as the head itself; while the body is furnished only with microscopic hairs, irregularly distributed. In both this and *Satyrus* the bifurcation of the last segment of the mature larva, long known as a characteristic of the sub-family of *Satyrinæ*, is scarcely perceptible in the embryonic caterpillar, being indicated in *Satyrus* only by slight tubercles.

In *Limenitis*, the head of the young larva is smooth and equal, and the body uniform in size throughout, studded with numerous equal,

stellate, regularly disposed warts. In the mature larva the head is covered with numerous conical warts, and surmounted by a pair of very large compound spinous tubercles. The body is by no means uniform, the second and third thoracic and eighth abdominal segments being "hunched" and tumid, while the first thoracic segment is much smaller than any of the others; the warts have changed to very variable tubercles—on the second thoracic segment into a long, club-like, spinous appendage,—and are mounted on mammulæ of different sizes; the whole, aided by the strange coloration of the animal, presenting a most grotesque appearance.

In the young larva of *Grapta*, the head is smooth, and the body furnished with three pairs of rows of minute warts, each emitting a long tapering hair. In the mature larva, the head is crowned by a pair of long, stout, aculiferous spines; and the body bears seven longitudinal rows of mammiform elevations, each surmounted by a compound spine. That these spines are not simply the out-growth of the hairs of the immature caterpillar is evident from the fact that there is a median dorsal row which is entirely wanting at birth, and that the position of the other spines, relatively to the sides of the segments upon which they occur, is quite different from that of the hairs in the young animal.

The same statement, with generic modifications, may be made of *Vanessa* and *Pyrameis*.

In the genus *Argynnis*—or, rather, in that section which has been rightly separated from it under the name of *Brenthis*,—the head of the young larva is much broader than high, and the body profusely furnished with conical warts, arranged, to a certain extent, in clusters, which are in eight longitudinal rows, continuous on the thoracic and abdominal segments, each wart emitting a very long, tapering, spiculiferous hair, expanding into a delicate cup-shaped club at the tip. In the mature larva, the head is equally broad and high, and the body furnished with six longitudinal rows of simple, not clustered, mammulæ, differently disposed on the thoracic and abdominal segments, each mammula bearing a stout, fleshy, conical, bluntly tipped, aculiferous process.

In *Melitæa*, the head of the immature and adult larva scarcely differ. In the younger stages, the body is equal, excepting that the posterior half tapers slightly; in the older period it is also nearly equal, but tapers forward a little on the thoracic segments. Besides this, we find differences similar to, but even greater than, those referred to in *Grapta*. In the embryonic larva, the body is furnished with small warts, giving rise to rather short, tapering hairs, all arranged in five

pairs of rows, three of them above, one on a line with, and one below, the spiracles. In the mature form, the hairs have given place to stout tapering spines, each supplied with many aculiferous, conical wartlets, and arranged in a median dorsal series and four pairs of lateral rows, two above and two below the spiracles.

If we next turn our attention to the *Lycænidæ*, we shall find similar differences. While the form of the head and body remain nearly the same from youth to maturity, the contrasts between the dorsal and lateral surfaces of the body are more pronounced in the early stage, both from the greater flattening of the upper field, and from the presence, at the line of demarcation between the two, of a series of warts, emitting hairs, some of which are exceedingly long, and curve backwards; similar hair-bearing warts are present along the fold dividing the lateral and the ventral regions, while there are one or more longitudinal rows of simple warts along the sides. The different groups, the *Theclæ*, *Lycænæ*, and *Chrysophani*, can be distinguished by the number of warts to a segment in each of the first-mentioned rows, and by the character of the hairs borne by them. In the full-grown larva, the linear series of warts are wanting, but the whole body is covered with microscopic hairs, seated, in *Lycæna*, on stellate dots, and which are only slightly, if at all, longer upon the angles of the body.

In the *Papilionidæ*, again, we find no differences of importance in the shape of the head, but some peculiar features in the armature and form of the body. In *Colias*, the embryonic animal is furnished with four rows of peculiar appendages on either side of the body, three rows above the spiracles, each bearing one appendage to a segment, and one beneath them bearing two appendages to a segment; these appendages are short, fleshy papillæ, expanding from a slender base to a club-shaped apex, as broad at its tip as the entire length. In the mature larva, all this is wanting, but the body is profusely clothed with minute short hairs, seated on regularly-disposed delicate warts.

Pieris is similar; the young larva is furnished with long, hair-like appendages, tapering slightly, but at the tip expanding into a delicate club, and disposed much as in *Colias*. In the mature larva, the body is furnished with two sets of minute warts, one arranged in regular transverse series and hairless, the other irregularly distributed and emitting each a short delicate hair.

In *Papilio*, the body of the infantine caterpillar is invariably more or less angulated, like that of the young *Lycænid*; while, at maturity, it is always quite regularly rounded above the spiracles. It is furnished, when young, with several longitudinal rows of bristle-bearing tubercles, one tubercle to a segment in each row, one row in the middle of the side more conspicuous than the others. When full grown, the body is

almost entirely naked in the species I have examined, being supplied only with smooth, hairless, scarcely elevated, lenticular warts, or with irregularly distributed very minute wartlets, bearing inconspicuous hairs. In other species there are long, fleshy filaments upon the sides of the mature caterpillar, but I have not seen the embryonic stage. In addition, the first segment is supplied with an osmaterium, which is wanting in early life.

The *Hesperidæ* strongly remind us of the genus *Colias*; for we find the body of the embryonic larva supplied with rather short fungiform or infundibuliform appendages, disposed in rows upon the sides of the body, and arranged as in the *Pierinæ*; while in the full grown caterpillar, the body is furnished only with short downy hairs, irregularly and profusely scattered. This furnishes an additional proof, of which many others are not wanting, of the close affinity of the *Papilionidæ* and *Hesperidæ*.

We have thus passed in review most of the great groups of *Rhoplocera*,* and have substantiated, in a general way, the assertion made at the outset:—that there are greater structural differences between the embryonic and adult stages of the same individual than can be found in the adult larvæ of allied genera. Indeed, this statement is perhaps too feebly formulated, so important are many of the distinctions which have been traced. These differences, it should be noted, are not always in the same direction; for we have seen that caterpillars which in infancy are clothed with appendages of a unique and conspicuous character, definitely disposed, display, in mature life, irregularly distributed, scarcely perceptible warts, emitting simple and nearly microscopic hairs; while others, which in their earliest stage bore regular series of simple hairs, seated on little warts, become possessed, at maturity, of compound spines, surmounting mammulæ, also definitely arranged, but occupying a very different position to the hairs of early life. So, too, we find some caterpillars which bear a tuberculated, irregular head in infancy, and a smooth and equal one at maturity; or the reverse, where the head is simple at birth, and heavily spined or cornute when full grown; others, again, remain almost unchanged through life. This latter condition of uniformity never applies to the appendages of the body, whether we consider their character alone, or their disposition. Nor—the only other possible condition—do we ever find larvæ bearing only irregularly distributed, simple, minute hairs in infancy, and regularly arranged special appendages at maturity. Indeed, it is doubtful whether such a phenomenon exists in Nature; since in the numerous and varied groups that have been examined, special dermal appendages have been found to be an invariable characteristic of embryonic larvæ.

August, 1871.

* Mr. Riley finds similar changes in *Danais*.—S. H. S.

NOTE ON THE OVIPOSITION OF *LIBELLULA* (*SYMPETRUM*)
FLAVEOLA, LINNÉ.

BY ALBERT MÜLLER, F.L.S.

In recording the following observation, I have no wish to call for a controversy on disputed points, having neither the inclination nor the leisure for one. I confine myself to saying, that I have honestly striven to observe correctly, bearing in mind Réaumur's remark that "*les..... observateurs ne sont pas toujours assés en garde contre l'envie de deviner des faits, ni assés attentifs à faire distinguer ceux qu'ils ne rapportent qu'après les avoir vûs, de ceux qu'ils ont imaginés en grande partie*" (Mémoires, T. 6, p. 433).

On the 27th August last, between 11 and 1 o'clock, as I sat down on the edge of a very small, shallow pond, at the bottom of Shirley Heath, my attention was soon drawn to the doings of a large number of one species of dragon-fly, which my friend Mr. McLachlan, after examination of a pair taken by me *in copulâ*, pronounces to be *Libellula flaveola*, Linné. The sun was shining brightly at the time, and the heat was intense.

Leaving to their own games the bachelor males flirting with lonely spinsters, I soon perceived that more important proceedings were taking place on the pond.

One copulated pair after the other came sweeping down from the hills, and kept hovering over the pond. If I say "copulated," I mean *here*, that each male still kept its hold on the neck of the female with its anal claspers, thus almost completely controlling her actions. As each couple arrived, I saw them fly, joined together as described, several times across and around the ditch, as if to make sure that the coast was quite clear. They did not seem quite to like the broad brim of my "Leghorn," but, as that shading head-gear was carefully kept quite motionless, a slight curve in their course was the only indication of their feeling somewhat disconcerted; so, after hawking to and fro a few instants, without being disturbed, they settled down to "business."

Hovering steadily at about half a foot's distance above the water, I watched each male jerk his partner violently down to the level of the water, which impetuous movement caused a very distinct, sharp, rustling sound of their wings. Then, rapidly dragging his mate up again, the ♂ would just shift his position to a little distance and repeat the same "whipping" of his helpless partner. Each time the surface was beaten by one stroke, as shown by the single circular wave gradually spreading; and each time only the abdomen of the ♀ touched the water. Now, I knew a little of what had been written on this "ungentlemanly" behaviour, and I particularly recollected the expressive poetical passage

quoted in Kirby and Spence's Introduction, vol. iv, p. 568: "*sed tandem lacesitus aquas petit, quas sponsæ cauda longa, me (Réaumur) teste, sæpius flagellat, donec defatigata, et quasi ex frigido calorem concipiens, demum et sensim caudam inflectit, et se reddit amori.*"

But sober truth is sometimes stranger than fiction, says Dr. Hagen, in the "Revue des Odonates," pp. 344, 345, translating Professor von Siebold's observation from "Germar's Zeitschrift für die Entomologie," vol. ii, p. 437:—

"Chez la (*L.*) *scotica* la ponte est fort curieuse à étudier, attendu "que le mâle seconde la femelle dans cette opération. Après l'accouplement il ne la quitte pas, et vole toujours en la tenant par le collier "jusqu'à ce qu'ils aient rencontré un lieu convenable dans les eaux stagnantes; alors il imprime à son abdomen le mouvement oscillatoire, "dont il a été question plus haut" (refers to a note on females *only* of *L. depressa* and *quadrimaculata*), "sans quitter la même place et sa femelle "doit suivre ce mouvement que le mâle exécute de telle sorte, que "chaque fois le bout de l'abdomen de la femelle trempe dans l'eau, et "que les œufs qui ont dépassé la vulve passent soudainement dans "l'élément propre à leur métamorphoses. Ayant examiné les places "où les mâles avaient ainsi dirigé leur femelles, j'y ai trouvé des œufs "en grande partie semés entre les plantes aquatiques."

As a child of the nineteenth century, it was my duty to try and show that we are ahead of the eighteenth; viz., that "flagellation" has given place to mild domestication, though without emancipation from maternal duties.

A large sheet of brown paper is usually part of my entomological outfit, and, in the present instance, its colour was most convenient, because it matched well with the clay bottom of the pond.

Soaking the paper carefully, I spread it out at the bottom, though it was a troublesome task to make level ground, as so many reeds, &c., were protruding; but at last the trap was sunk, and again I sought my rest on the bank. Down swooped a glittering pair, dancing an aerial "pas de deux," and I feverishly watched their actions, till rushing round with unceremonious alacrity, I secured the wary pair; and, having safely boxed them alive without hurting them, I did not mind a wet foot, if I found an egg on my paper.

Solitary, almost globular, pale amber-coloured, half millimètre in diameter, there it lay, a silent witness that even a Réaumur is apt not to mind his own "wise saws." Oviposition, then, not copulation, is the object of the ♂ dragging the ♀ along the water, and dipping her at nearly regular intervals. The ♀ thus caught, after laying what was

probably her first ovum, laid 123 more, each loose by itself, in my box; and to von Siebold's observation on *L. scotica*, Don., I have now to add the fact, that its near ally *L. flaveola*, L., also drops her eggs, guided by the male, during flight, singly. each at a distance, loosely in the water, and not in bunches attached to any object. On the 8rd, and again on the 10th September, I re-witnessed the facts here detailed at the same pond, but without actually seeing an egg dropped. *En revanche*, having on the latter day induced a collector, whom I accidentally met, to catch a few of these dragon-flies, I saw a dying, pinned ♀ deposit her eggs in one bunch in his box. But, from the flaccid condition and great softness of these eggs, I conclude that they are not impregnated, and were only got rid of in the dying struggles of the insect. This incident, however, serves to show how careful we ought be to abstain from assuming that vital functions are performed in a similar way under natural and artificial conditions. "*Experientia docet*," that false and real data lie sometimes very close together, and that it will always be a great tax on the human mind to discern between the two. I have preserved in spirits both the unimpregnated egg-bunch and the mature loose eggs.

South Norwood, S.E., 11th September, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 9).

BY H. W. BATES, F.Z.S.

LOXANDRUS SUBCORDICOLLIS, n. sp.—*Elongato-oblongus, niger, politissimus, læte iridescens, antennis, labro, palpis pedibusque rufo-fulvis; thorace antice late rotundato, postice valde sinuato-angustato, angulis posticis prominulis, basi grosse pauciter punctato, fovea utrinque lata profunda; elytris profunde striatis; abdomine piceo-rufo.*

Long. $3\frac{1}{4}$ lin. ♂.

Distinguished from *L. xanthopus* chiefly by the thorax being dilated anteriorly and conspicuously narrowed behind; in front it is not much narrower than the base of the elytra.

St. Paulo, Upper Amazons.

LOXANDRUS CURTONOTUS, n. sp.—*Oblongus, piceo-niger, politus, iridescens; labro, antennis, palpis pedibusque rufo-fulvis; thorace brevi, transverso, antice rotundato, postice modice angustato, angulis posticis prominulis, suprâ toto basi punctato, fovea utrinque profunda, elytris punctato-striatis; subtus rufo-piceo, episternis impunctatis.*

Long. $3\frac{1}{2}$ lin. ♂ ♀.

Closely-allied to the preceding, but a distinctly broader and more robust insect, and distinguished by its punctured striæ.

Ega.

LOXANDRUS GRAVESCENS, n. sp.—*Robustior, oblongus, postice obtusus, piceo-niger, nitidus, leviter iridescens* (♀ *elytris sericeo-opacis*), *antennis, labro, palpis pedibusque rufis*; *thorace transverso, antice rotundato, postice prope basin sinuatim angustato, angulis posticis, rectis, suprâ medio basi parce punctato, fovea lata utrinque profunda*; *elytris striatis, striis subtiliter punctatis*; *corpore subtus sericeo, impunctato*.

Long. $3\frac{1}{2}$ — $4\frac{1}{2}$ lin. ♂ ♀.

A species of somewhat heavier "build," especially in the larger individuals, than usual in this genus; with rather shorter and stronger legs and broadly rounded apex. The anterior angles of the thorax are also blunt and deflexed, giving a more obtuse appearance to that segment.

Banks of R. Tapajos.

LOXANDRUS SUBPARALLELUS, n. sp.—*Elongato-oblongus, niger, politus, leviter iridescens, antennis, palpis tarsisque fulvo-rufis, antennarum articulis 3—4 nigro-maculatis*; *thorace antice late dilatato-rotundato, postice angustato, angulis posticis rectis*; *toto basi sparsim grosse punctato*; *elytris striatis, striis subtiliter punctulatis*; *corpore sublus piceo-sericeo, impunctato*.

Long. 5 lin. ♂.

The thorax anteriorly is not much narrower than the elytra.

St. Paulo, Amazons.

LOXANDRUS RUBESCENS, n. sp.—*Oblongo-ovatus, læte iridescens, rufus, capite suprâ et elytris (sutura marginibusque exceptis) piceo-nigris, antennis (basi flavo excepto) fuscis, palpis pedibusque flavis*; *thorace quadrato, postice paululum angustato, angulis posticis prominulis, suprâ medio basi grosse pauciter punctato, fovea lata profunda*; *elytris profunde striatis, striarum fundis subtilissime punctulatis*; *metasterno grosse sparsim punctato*.

Long. $2\frac{1}{2}$ — $3\frac{1}{2}$ lin.

Upper Amazons.

LOXANDRUS PICTICAUDA, n. sp.—*Oblongo-ovatus, leviter iridescens, piceus, antennarum basi, palpis pedibusque flavo-testaceis*; *elytris margine lato apicali maculaque parva suturali propinqua flavo-testaceis, interdum nigro-marginatis*; *thorace quadrato, interdum sanguineo, postice paululum sinuato-angustato, basi punctulato, fovea utrinque angusta profunda*; *elytris punctato-striatis*; *episternis impunctatis*. *Long.* $2\frac{3}{4}$ lin. ♂ ♀.

R. Tapajos.

LOXANDRUS RUFOSTIGMA, n. sp.—*Oblongus, niger, leviter iridescens,*

antennis, palpis pedibusque rufo-testaceis, elytris margine apicali angusta indeterminata maculaque ovata suturali prope apicem rufo-testaceis; thorace quadrato, postice paululum angustato, angulis posticis rectis, basi utrinque punctato et fovea minus elongata, lata, profunda; elytris punctato-striatis; subtus, meso- et metasternis abdominisque basi punctatis.

Long. $3\frac{1}{2}$ —4 lin. ♂.

In colours of apex of the elytra this species resembles *L. picticauda*, but it is distinguished by its larger size, deeper black colour, the very much narrower pale apical border, and especially by the coarsely punctured episterna of its meso- and metathorax. It is evidently closely allied to *L. posticus*, Brullé; in which, however, the anterior femora are partly black.

Ega, Upper Amazons.

LOXANDRUS QUADRINOTATUS, n. sp.—*Oblongus, piceo-fuscus (elytris iridescentibus); antennis, palpis, capite antice, thorace pedibusque rufo-testaceis, elytris macula quadrata humerali, interstitia 5—8, alteraque minori prope apicem, interstitia 2—4 occupanti, flavo-testaceis; thorace quadrato, lateribus sub-regulariter rotundatis, angulis posticis sub-rectis, apice obtusis, suprâ basi sparsim punctato, utrinque fovea elongata sulciformi; elytris fortiter striatis; corpore subtus iridescenti, sternis (præcipue metasterno) punctatis.*

Long. $3\frac{1}{2}$ lin. ♂ ♀.

Obydos, Lower Amazons.

LOXANDRUS TETRASTIGMA, n. sp.—*Oblongo-ovatus, nigro-piceus, nitidissimus (elytris læte iridescentibus); antennis, palpis, capite antice pedibusque flavo-testaceis, elytris macula rotundata humerali, interstitia 6—8, alteraque parva prope apicem interstitia 3—4 vel 3—5 occupanti, fulvo-testaceis; thorace quadrato, lateribus rotundatis, angulis posticis sub-rectis, suprâ basi parce punctatis, utrinque fovea ad fundum sulcata; elytris fortiter striatis, striarum fundis punctatis; corpore subtus iridescenti, sternis (præcipue metasterno) punctatis.*

Long. $2\frac{1}{2}$ —3 lin. ♂ ♀.

Closely allied to the preceding, differing only in the darker colour, smaller size of the elytral spots and distinctly punctulated striæ; besides being a smaller insect.

Ega, Upper Amazons.

LOXANDRUS VITTATUS, n. sp.—*Oblongus, fusco-piceus, iridescens, labro, palpis, antennarum basi pedibusque rufo-testaceis, elytris vitta, interstitium 6^{um} occupanti, postice abbreviata, maculisque binis posticis*

suturam versus flavo-testaceis, ornatis, marginibus lateralibus apiceque pallidulis; thorace quadrato, antice sat rotundato, postice angustato, angulis posticis prominulis, basi impunctato, fovea utrinque profunda; metasterno punctulato. Long. 4 lin. ♀.

The pale vitta of the elytra commences at the base, spreading there to the 7th interstice, but through the rest of its course it is confined to the 6th, and terminates at two-thirds of the elytral length; it is succeeded, a little more inward, by an irregular pale spot on the 4th and 5th, and this again by a smaller spot on the 3rd and 2nd interstices. The elytra have impunctate, sharp striæ.

Rio Janeiro. Taken by the late Rev. Hamlet Clark.

LOXANDRUS VIRIDESCENS, n. sp.—*Minor, gracilior, piceo-niger, elytris sericeis, iridescentibus, leviter viridi-tinctis, antennis, palpis pedibusque testaceo-rufis; thorace valde transverso, elytris multo angustiori, antice leviter rotundato, postice paululum angustato, marginibus postice latius explanatis rufo-testaceis, angulis posticis prominulis, supra basi utrinque punctis majoribus perpaucis foveaque breviori profunde impresso; elytris punctulato-striatis, sutura marginibusque plus minusve rufis; corpore subtus impunctato, sericeo-nitenti.*

Long. 3 lin. ♂ ♀.

Generally distributed throughout the Amazons region, under sediment, on the banks of the rivers.

LOXANDRUS OPACULUS, n. sp.—*Oblongus, sub-parallelus, infra ferrugineus, supra niger, elytris sericeo-opacis palpis antennarumque basi rufo-testaceis, pedibus rufo-piceis; thorace quadrato, elytris vix angustiori, antice vix rotundato, postice parum angustato, angulis posticis haud prominulis sed distinctis, marginibus rufo-piceis, medio basi punctis paucis magnis, fovea utrinque brevi fortiter impressa; elytris subtiliter punctato-striatis, sutura postice marginibusque rufo-piceis; corpore subtus impunctato.* Long. 3 lin. ♂ ♀.

The whole under-surface of the body is of a clear ferruginous red hue in both my specimens: this character, together with the nearly square thorax and the very fine sharply impressed striæ, amply distinguish this species.

Banks of the Tapajos.

LOXANDRUS MACRODERUS, n. sp.—*Oblongus, piceo-niger, politus, læte iridescens, labro, epistomate, palpis, antennarum basi (reliquis obscurioribus), pedibusque flavo-testaceis; thorace elongato, quadrato, postice haud angustato,*

angulis posticis rotundatis, margine laterali reflexo rufo-testaceo, suprâ medio basi grosse punctato, fovea utrinque elongata profunda; spatio inter foveam et angulum fortiter convexo; elytris fortiter punctulato-striatis, sutura postica marginibusque rufescentibus, apice flavo-testaceo; corpore subtus lævi, splendide iridescenti. Long. $3\frac{1}{2}$ lin. ♀.

Resembles the *Platyderi* of Europe in the shape of the thorax.

St. Paulo, Amazons.

LOXANDRUS ATTENUATUS, n. sp.—*Elongatus, angustus, niger, nitidus, labro, palpis, antennarum articulo basali pedibusque flavo-testaceis, elytris macula parva suturali apicem versus rufo-testacea; thorace elongato, subcordato, antice rotundato, postice valde angustato, prope angulos posticos reflexo, medio basi grosse crebre punctato, fovea utrinque elongata sulcata, spatio inter foveam et angulum plano, lævissimo, reflexo, angulis obtusis; elytris fortiter punctato-striatis; corpore subtus piceo, lævi.* Long. 3 lin. ♀.

Banks of Tapajos.

LOXANDRUS CELEBENSIS, n. sp.—*Elongato-oblongus, nigro-piceus, toto sericeo-iridescens, palpis antennarumque basi piceo-rufis, pedibus piceis; sulcis frontalibus latis, viz impressis; thorace quadrato, lateribus æqualiter rotundatis, anguste reflexo-marginatis, angulis posticis rotundatis, suprâ lævissimo, fovea utrinque basali elongata, obliqua, ad fundum sulcata; elytris fortiter striatis, striarum fundis punctulatis; subtus, meso- et metathoracis episternis abdominisque basi punctato-rugosis, ♂ tarsorum anticorum articulis tribus valde obliquis, solis squamis pectinatis, elongatissimis, tarsi intermedii posticique multisulcati.* Long. 4 lin. ♂.

Celebes. From Mr. Wallace's collection.

The following species differs so essentially from the *Loxandri*, and from the allied genera *Abacetus*, *Drimostoma*, *Trirammatus*, &c., that a new genus must be formed for its reception.

Genus METONCIDUS.

Gen. char.

Mentum. Central tooth much smaller than side-lobes, broadly-rounded at the apex.

Palpi. Terminal joints cylindrical, truncate.

Antennæ. Moderately short, filiform.

Head. As in *Loxandrus*, frontal pits small, rounded.

Thorax. Basal fovea single on each side, broad and deep, without sulcus.

Elytra. Strongly convex posteriorly; without abbreviated scutellar stria, and with a series of large punctures posteriorly on alternate interstices.

Melathoracic episterna elongated, narrow, inner margin sulcated.

Anterior tarsi ♂ with three dilated, short, cordiform joints, not oblique, and furnished beneath with close-fitting squamæ, in two rows.

METONCIDUS TENEBRIONIDES, n. sp.—*Oblongus, postice valde convexus, niger, nitidus, palpis, antennis pedibusque piceo-rufis, tarsis pallidioribus; thorace transversim quadrato, antice parum rotundato, postice leviter angustato, marginibus angustis, angulis posticis sub-rectis, suprâ impunctato, fovea utrinque basali oblonga, profunda, fundo obtuso, lævi; elytris pone medium angustatis, postice iterum paulo dilatatis, suprâ punctulato-striatis, interstitiis 1, 3, 5, postice punctis majoribus seriatim impressis; corpore subtus lævissimo.*

Long. 5 lin. ♂.

Ega, Upper Amazons.

Kentish Town: October, 1871.

DESCRIPTION OF A NEW SPECIES OF *PHOXOPTERYX*, FROM GREAT BRITAIN.

BY C. G. BARRETT.

When collecting in the Norfolk fens this summer, I several times met with a very pretty *Tortrix* of the genus *Phoxopteryx* of Guenée, which appears to be undescribed, and which I accordingly characterize as follows:—

PHOXOPTERYX PALUDANA, n. sp.

Antennæ brown. Head and thorax whitish. Fore-wings silvery-white, clouded with very pale chocolate towards the hind margin. On the inner margin, from the base to the middle, is a chocolate-brown blotch, reaching more than half across the wing, and very obtusely angulated towards the costa. Opposite to this angle, a bright chocolate fascia, exteriorly edged with white, rises on the costa, proceeding half-way to the anal angle, when its exterior margin forms a very acute angle towards the apex of the wing, and touches a cloud of the same colour which occupies the tip. On the costa, towards the apex, the usual short streaks are faintly visible. Hind-wings pale grey in the male; dark grey in the female.

Allied to *Lundana*, but with longer, narrower wings, the dorsal blotch much flatter and more angulated, the fascia distinct and much more acutely angulated, and the space beyond it pale.

Found flying, just before dusk, among the shortest of the rank herbage at Ranworth fen, in June, and again in August.

Mr. Bond has also shown me specimens from the Cambridgeshire fens.

Norwich: 28th September, 1871.

Occurrence in Britain of Atomaria atra, Hbst.—I have long endeavoured to detect this species among the numerous members of its genus that have from time to time come under my observation; but always in vain, until very recently, when I found a single example of it among some enigmas sent to me by Mr. Wollaston, by whose sister-in-law, Miss E. Shepherd, it was swept up in a low, damp copse, alongside the Medway, about half-a-mile from the Powder Mills, near the village of Leigh, during the past summer. Mr. Wollaston has also long, and until now ineffectually, been on the “*qui vive*” for this insect, which is the more interesting, since it is figured by Sturm as the type of the genus. *A. atra* is apparently most closely allied to *A. fuscata*, to dark examples of which it bears considerable resemblance. Its type form, however, is deep black in colour, and it has a longer, more convex and more laterally rounded thorax, and wider and stronger punctuation on the elytra, which are more acuminate behind in outline.—E. C. RYE, 10, Lower Park Field, Putney, S.W., October, 1871.

Occurrence in Britain of Throscus carinifrons, Bonv.—Mr. Wollaston has also recently sent to me for determination a *Throscus*, which must be referred without doubt to Bonvouloir's species above named (Ess. mon. sur la famille des Throscides, p. 20). Two examples (one, now, thanks to Mr. Wollaston's generosity, in my own cabinet) were taken by that gentleman during the hot weather of August last, crawling rapidly over a wooden fence in a garden at Dry Hill, Tonbridge; and, although constantly looked for, no others were found. These two examples are apparently ♂ and ♀, the male being the smaller, with flatter and laterally more sinuous thorax, and stouter antennal club;—sexual differences also to be observed in *T. dermestoides*, which it superficially most resembles, being very nearly of the same size as small specimens of that insect; but the two frontal keels of its head are more distinct and extend backwards to the pro-thorax; its eyes are divided considerably beyond the middle by a narrow, horny plate, its thorax is flatter, and (in the ♂, at least, and as figured by de Bonvouloir) very evidently and suddenly sinuously contracted towards the front from the lower third; the striæ of its elytra are more delicately impressed, and the interstitial punctures rather clearer, as the surface is not so coarsely granulated; the elytra themselves are more acuminate behind, and the tibiae are not so stout. Its larger size, the more evident contraction of the sides of its thorax towards the front, the much less thick punctuation of the interstices of its elytra, &c., at once separate it from *T. elateroides*.—ID.

Capture of Trichonyx sulcicollis, Reichenb., at York.—I have recently taken a single example of this gigantic Pselaphid, crawling on my door-step. Further search has failed to discover any more specimens. The occurrence of this fine species so far north in Britain can scarcely fail to be of interest.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Rood, York, October, 1871.

Notes on the question of hybrids in Coleoptera.—During the past summer I noticed *Crepidodera ferruginea* in copula with *C. rufipes*, at Llangollen. I have also observed the first of those species in copula with *C. transversa*, on Chat Moss.—T. MORLEY, 57, John Street, Pendleton, Manchester, September, 1871.

Notes on the metamorphoses of Metatropis rufescens.—Some few years since, when beating a willow bush, I obtained a single specimen of *Metatropis rufescens*. This I was told at the time was the second example of that species known to have been taken in England; but all my efforts to find more in the same way proved failures.

Last spring, Mr. J. Scott informed me that it had been taken in Switzerland, on *Circœa lutetiana*; and, as I knew that plant grew in the neighbourhood, I determined to discover the bug, if possible. However, I was unsuccessful, until June last, when I had the pleasure of capturing on that plant about two dozen small Hemipterous larvæ, which, as I expected, proved to be those of *M. rufescens*. Having never tried to rear any of the *Hemiptera*, I had some doubts of being able to do so successfully; but, as the food plant was small and manageable, I determined to make the attempt; so I carefully removed some of the growing plants, and, when I got home, potted them, covered them with a gauze-topped cylinder, put the bug-larvæ upon the plants, and left them to their fate. The next day I was glad to see some of them with their proboscides buried in the soft flower-buds, sucking away at the juices with vigour. They fed up well, giving me no trouble beyond that of occasionally watering the plants, and changed their skin three times during captivity, the wing-cases becoming more distinct after each moult. They were full-fed by the end of August.

The mode of casting the skin, especially the last, was to me most interesting. As the creature increases in size the skin gets too short for it, and the anal extremity becomes drawn up somewhat over the abdomen. It now fixes itself firmly by the claws to a leaf or stem of the plant, head downwards. The head is bent under, the antennæ are laid along between the legs, and the larva appears to forcibly straighten the abdomen, the pressure causing the skin behind the head to split, and the thorax to be protruded through the opening. Leg after leg is drawn slowly out, the head and antennæ following; the wing-cases and wings are drawn down to their proper proportions, and the imago then remains suspended by the last segment. In a short time it extricates itself entirely, but is some time before coming to its proper colour and firmness. The old coat would, I think, make a good object for the microscope.—HENRY MONCREAFF, High Street, Portsmouth, October, 1871.

Captures of Hemiptera at Bournemouth, &c.—From the 9th to 25th September I was at Bournemouth, and, although the weather was dry and sunny, insects, not numerous at first, became scarcer day by day, until at last hardly one was to be had; hence I concluded that my visit should have ended about the time it began. I note only the best captures.—

Corizus Abutilon, Rossi: one, by sweeping *Psamma arenaria*. This is the second recorded English specimen.

C. parumpunctatus, Schill.: two, by sweeping the *Psamma*.

Hypnophilus micropterus, Curt.: one, with the membrane of the elytra fully developed:—a very rare form.

Phytocoris ———?: one specimen among heath, near pine trees. Agrees with the description of *Ph. pini*, Kirschb., in many respects, but differs in having the first joint of the antennæ longer than the pronotum.

Salda arenicola, Scholz. The soil of the Bournemouth district is sand to a great depth, and at the shore the cliffs show that the sand rests on a sub-stratum of black clay. At several places where the sand and clay meet, water oozes out and runs over the latter, which crumbles down under its influence. In such situations, as mentioned by Mr. Edward Saunders (E. M. M., Vol. vii, p. 157), especially at Boscombe Chine, this *Salda* was not uncommon, but very difficult to see when at rest on the concolorous clay, and hard to capture when it moved, which was by flight, and not by leaps *more Saldarum*. Nevertheless, by the aid of a stick, I persuaded a few to enter my net, where they were easily bottled.

Salda ——— ? : with the above I got one example which I cannot refer to any species known to me. It is quite unlike *S. arenicola*, being of a short, broad-oval form, and of a brown-black colour, almost without markings on the elytra.

Monanthia 4-maculata, Wolff: several, beaten from an old crab-tree in the New Forest, near Brockenhurst.—J. W. DOUGLAS, Lee, 3rd October, 1871.

Phacopteryx brevipennis at Ranworth Fen.—Among some miscellaneous *Neuroptera* kindly collected for me by my friend Mr. Barrett, is an example of this insect, captured at Ranworth Fen in September. It is the fifth recorded British specimen; the others being Curtis's type, of uncertain locality, two taken at Scarborough by Mr. Fereday, and one at Bowdon by Mr. B. Cooke (see Ent. M. Mag. ii, p. 95). Probably it is of rare occurrence generally, for I have seen but few examples in the various boxes of European *Trichoptera* that have passed through my hands.—R. MCLACHLAN, Lewisham, 2nd October, 1871.

Occurrence of Agrypnia Pagetana near Edinburgh.—While staying at Edinburgh in August last, I captured fourteen specimens of the Neuropterous *Agrypnia Pagetana* by sweeping along the margins of Duddingston Loch, at the foot of Arthur's Seat. I believe this is the first time that the species has been met with in Scotland; and, so far as I am aware, the only locality previously recorded for it is the Fen District of Norfolk, where Mr. Winter, of Aldeby, took it in some numbers; Curtis's type specimen being from the same part of the country.—P. C. WORMALD, 2, Clifton Villas, Highgate Hill, N., 21st September, 1871.

Pieris Daplidice at Folkestone.—This autumn has produced a fair return; a *Daplidice* taken at Sandgate by Mr. J. W. Gore, and another captured above West Cliff, being the best.—T. H. BRIGGS, Folkestone, 17th October, 1871.

Note on a probably new species of Platyptilus.—I have long been of opinion that some confusion existed about the two plume-moths, termed by British authors *Platyptilus trigonodactylus* and *Platyptilus Zetterstedtii*, and I accordingly consulted Dr. Standinger upon the subject, sending him an English *trigonodactylus*, and a sketch of our English *Zetterstedtii*, from a specimen lent me by Mr. Doubleday. He replies thus:—"My opinion is, that the species sent under the name *trigonodactylus*, "Stt., is, without any doubt, *Zetterstedtii*, Zell., the larva of which feeds on *Tus-silago farfara*. The insect which you term *Zetterstedtii* in England, and of which "you have sent me a figure, is entirely unknown to me, and most probably a new

"and unnamed species. *Trigonodactylus*, Stt., ought, therefore, to be looked upon "as a synonym of *Zetterstedtii*, Z., and not of *gonodactylus*, S. V., which is allied "to, but decidedly different from, *Zetterstedtii*."

It would seem at first that the tangle was unravelled, and that all we had left to do was to name our English species, but such is not quite the case. I have at present a specimen from Herr Mühlig, labelled *gonodactylus*, and yet, without doubt, a *trigonodactylus*, Stt.; and next, in the paper on Swedish plume-moths by Herr Pastor Wallengren, a *Platyptilus Zetterstedtii* is spoken of, the larva of which feeds on *Senecio nemorensis*. The confusion is therefore not entirely confined to the Entomologists of Gt. Britain; and I shall, in the next place, endeavour to find out what is the *gonodactylus* of the Vienna Catalogue, as indicated by Dr. Standinger, and what is the *Zetterstedtii* of Wallengren.

It would be highly interesting if those Entomologists who have taken this rare British plume would give full particulars of its capture. It is very scarce in collections, and probably the specimens which exist are not more than a dozen. As a *Platyptilus*, the larva would be certain to live in the interior of the stem of some composite plant, and amongst the most probable are *Inula crithmoides*, *Chrysocoma limosyris*, and *Cineraria campestris*, all of them maritime in their haunts.

If this prove to be an unnamed insect, it would be very pleasing to me if Mr. Doubleday would allow his name to be affixed to it.—R. C. R. JORDAN, 35, Harborne Road, Edgbaston, Birmingham, September 15th, 1871.

Butalis cicadella at Southend.—Observing in the September number of the Magazine the notice of the capture of this insect at Weybridge, by Mr. McLachlan, and reference made to my own captures, I think it as well to state that I took about a dozen specimens of this moth at Southend, about 20 or 25 years ago, in the flowers of a kind of dandelion, and they remained with a memorandum under them as "new species" till Mr. Stainton kindly determined them a few years back. At the time of their capture it was almost impossible to name these obscure species. I remember I took them both to Mr. J. F. Stephens and to Mr. Bentley, who could not identify them. On the day I captured this new species, I was fortunate enough to add three other species to our list, viz.: *Acidalia perochraria*, *Catoptria citrana*, and *Gelechia pictella*: four new species in one day I expect will never fall to my lot again.—SAMUEL STEVENS, 28, King Street, Covent Garden, October, 1871.

Heliothis armigera near *Exeter*.—After an interval of ten years, I have again captured, in my garden, a single specimen of *Heliothis armigera*. The perfect state of the specimen would indicate its birth-place to be not far distant.—H. D'ORVILLE, Alphington, near Exeter, October 18th, 1871.

Note on the sound produced by *Chloephora prasinana*.—I only noticed yesterday in the 'Annual' for 1871, that Dr. Knaggs seems rather to doubt the account of the sounds made by *C. prasinana* (pp. 78, 79).

It will be found that the fact was stated by me long ago in my "History of British Moths." I wrote of my own knowledge; I remember the time, place, and circumstance well: I was then at Bromsgrove School, and was out "hunting" one evening; and I remember that it was very early, and before actual dusk, on a hill, or rising ground rather, some two or three miles from the town, near

Stoke Court, where I saw many of these moths, the only time I ever saw them alive, flying up and down and very fast, and hard to catch, near or above the top of an old-fashioned high hedge, on the side of a wide, grassy lane.

I could not help being struck by the stridulous sound they made as they flew. The fact is, in my opinion, beyond all doubt or question; and it is recorded in my book as stated above, "This insect makes a curious stridulous noise when flying."—F. O. MORRIS, Nunburnholme Rectory, Hayton, York, *September 14th, 1871.*

Captures of Lepidoptera at Glanvilles Wootton.—The following are the best of the *Lepidoptera* I have taken during the past poor season at Glanvilles Wootton. March, *Tæniocampa miniosa*, *Heusimene fimbriana*; April, *Eupithecia irriguata*, *E. coronata*, *Hyponomeuta vigintipunctata*, *Eubolia multistrigaria*; May, *Lobophora viretata*, *Hypsipetes ruberata*, *Anchylopera diminutana*, *Odontoptera bidentaria*; June, *Egeria cynipiformis*, *Thera firmata*, *Macaria alternata*, *Lobesia Servillana*, *Eupoecilia humidana*, *Anchylopera ramana*, *Lampronia rubiella*, *Fumea roboricolella*; July, *Leucania comma*, *Cucullia asteris*, *Heliothis peltigera*, *Melanthia picata*, *Geometra papilionaria*, *Acidalia imitaria*, *Carpocapsa splendana*, *Pempelia consociella*; August, *Lithosia stramineola*, *Ephyra poraria*, *Crambus pinetellus*; September, *Trichiura cratægi*, *Cidaria psittacata*, *Cerostoma alpella*, *Zelleria hepariella*, *Gracilaria cuculipennella* and *elongella*.—C. W. DALE, Glanvilles Wootton, *October, 1871.*

Captures of Lepidoptera in the New Forest.—I have to report the capture of a larva of *Acronycta alni* on bramble, near Foxleaze, in the New Forest. I was beating for larvæ among the underwood, when I noticed a larva seated on a thick pad of silk, on a bramble leaf, and which, on closer inspection, proved to be that of *A. alni*. It seemed to be changing its last skin, but its appearance struck me as being peculiar, for, although it had not freed itself from its old head, the colours and markings were those of the adult, as it had those peculiar clubbed hairs which, I believe, are only found after the last change has been accomplished. It was also in a very flaccid condition, and did not move when touched. However, I kept it, hoping it might prove alive; but, on the second day after finding it, it was evidently dead through starvation, from not being able to free itself from its old head.

I also had a larva of *Acherontia Atropos* brought me; it was of the olive-coloured variety, and has since buried.

My best captures at sugar during my stay of a fortnight (from 5th to 21st August) were: *Cerigo Cytherea*, several; *Tryphæna interjecta*, one; *T. subsequa*, which came regularly to sugar in one locality, though not in any abundance, three being the largest number seen in one evening (I took altogether eleven specimens, most of them moderately good); *Catocala promissa*, seven, and *C. sponsa*, several. This species was most abundant in the larger enclosures: I have several times dislodged it and *promissa* from the lower boughs of oak, when beating for larvæ; but it always flew to the top of the trees when thus disturbed, so that it is not possible to capture it by that means.—B. LOCKYER, Camden Road, London, N.W., *August 25th, 1871.*

Natural history of Noctua umbrosa.—The larva of this species having eluded the search of myself and many of my friends for a number of years, a belief gained

ground with us, that it probably closely resembled that early pest *xanthographa*; and this belief was strengthened three or four years ago, by the fact of Mr. Harwood having bred one specimen of *umbrosa* from a lot of larvæ which he had collected as those of *xanthographa*.

I have at length been able to prove our surmise to be correct, thanks to Mr. George Norman, to whom I feel deeply indebted for his taking much pains in obtaining and sending me from Forres, three separate batches of eggs of *umbrosa*, on July 27th, 28th, and 30th, 1870. From them, the young larvæ began to hatch respectively on August 3rd, 5th, and 11th. At first, grass was provided for them, but they refused to eat, and some of them died. I then supplied them with dock leaves, and thenceforth all went well; they fed and thrived satisfactorily; but, towards the end of November, dock began to fail, and the few leaves I could then obtain were supplemented with bramble, of which the larvæ partook freely. My chief object being to obtain figures of the larvæ, I did all I could think of to force them on to full growth, and succeeded with some of them by feeding with *Plantago lanceolata*, *Galium mollugo*, *Vinca major*, and garden-strawberry leaves, all of which they ate at intervals, when the rigour of winter in the least abated. At length the Periwinkle became the only food procurable, and on this they did very well; for, even while the snow lay on the ground, the leaves of this plant continued green and succulent; thus, between the intervals of hard frost, the larvæ crawled out of their temporary hibernacula of curled-up, dry bramble leaves, and partook of their food. Of course they were not kept in the open air, but in a room without a fire, so that at no time were they exposed to frost.

Towards the end of February and beginning of March, 1871, young dock leaves began to appear, and, with an increase of temperature, the larvæ became more lively and hungry; the smaller ones, whose coats had become dingy, now moulted and fed, while the others that had reached their full growth about Christmas began to stir, and show symptoms of approaching pupation; they grew smaller, their colours merged into a darkness, which spread over them as they retired into moss; several of them becoming pupæ between February 27th and March 11th.

The others continued to feed chiefly on dock, with a little of *Scrophularia aquatica*, and attained their full size the first week in April; they then, however, like their predecessors, began to dwindle, and became darker and darker till they were blackish-brown. A few entered the earth, the rest went into moss, where they assumed the pupa state, but without forming any cocoon in either; though those in the moss appeared to be steadied in their positions by a slight thread or two. The moths appeared from June 8th to 13th.

The egg is circular, domed above and flattened beneath, finely ribbed and reticulated. When first laid, it is of a yellowish-white colour, and changes in six days to a glistening pink, and finally to pinkish-grey.

The young larva, when hatched, had at first a pale brown head, and greenish-grey body, paler and pellucid at the segmental divisions; in eight or nine days they were pale, semi-transparent, yellowish-green, with distinct black dots. At their next change, at the end of another week, they were three-eighths of an inch long, and not translucent, but with a suffusion of opaque-brown over the back and sides, giving them a velvety, brownish-green look; and there then appeared dorsal, sub-dorsal, and lateral lines, paler than the ground; between the lateral

line and spiracles the space was filled with a darker tint of the ground colour, forming a broad dark stripe. At this stage the character of *umbrosa* is very distinct from its congener, and remains so until the length of about five-eighths of an inch is attained; but the next moult introduces the design that at once recalls the well-known *xanthographa*, and continues throughout their future larval career.

There were three varieties of the general colouring in each of the three broods, some being yellowish, some brownish, and others of a greyish-brown, but in the detail of their markings they were all very constant. The individual from which the following description was drawn was one of the yellowish varieties.—

The full-grown larva is from $1\frac{1}{4}$ to $1\frac{3}{8}$ inch in length, moderately stout and cylindrical, though tapering a little at the anterior segments, the head being smallest, the last segment also sloping down on the back from the twelfth, and tapering a little to the extremity. Viewed on the back, the colour of the head is pale brownish, freckled with darker brown, and streaked with brown on the front of each lobe, and very shining; the skin generally smooth and rather velvety on the rest of the body, though a little shining on the back of the second segment; the dorsal line is very pale whitish-ochreous, edged with a dark brown line on each side; it is not quite a simple line, but commencing broad on the front of each segment, soon narrows, expands again just at the middle, again contracts, and widens again at the end; the sub-dorsal line is of uniform thickness throughout its course, and is also of the same whitish-ochreous tint, edged on its lower side with a fine, dark brown line, and on its upper-side by a wider brown stripe, bearing a black dash, sometimes rather of a wedge shape, on the anterior half of each segment; the ground-colour of the back between the lines is ochreous or brownish, marked with fine, longitudinal, dark brown, wavy streaks, which are variously disposed in their aggregation, sometimes suffusing the ground-colour in a narrow diamond form; in other examples more suffused behind, but generally these streaks give more depth of colouring at the anterior part of each segment; the front pairs of tubercular dots are black, and they often send forward a fine black streak; the hinder pairs are also black, but, from standing within the before-mentioned black dashes, are invisible; the twelfth segment has the sub-dorsal lines slanting inwards for two-thirds of its length, where the last pair of the black dashes end abruptly, as do also the suffused, wavy streaks, and from that part the sub-dorsal lines bend outwards, and resume their former course, approximating towards the end of the dorsal line at the anal extremity; the colouring of the side as far down as the spiracles consists of two longitudinal, broad bands or stripes of equal width throughout, the upper being pale ochreous (sometimes bearing a few brown scattered freckles), the lower dark brown, containing a slanting dash of still darker brown made up of atoms; on the lower edge of this come the spiracles, which are not very conspicuous, being small dirty whitish, outlined faintly with black. The sub-spiracular stripe is of pale, unfreckled ochreous, and is attenuated a little at each end; the belly and legs are of a very slightly deeper tint of the same, and there are some minute tubercular dots and freckles of dark brown above and upon the legs, which are tipped with dark brown.

The pupa is about half-an-inch in length, moderately stout and smooth, with no striking peculiarity of form, dark brown in colour and rather shining.—Wm. BUCKLER, Emsworth, September, 1871.

Notes on Nomenclature.—For the sake of brevity, I shall confine myself at present to clearing up some misapprehensions which exist respecting Linnæan names, and some minor points. Mr. Crotch (E. M. M., viii, p. 71) states that, when Linnæus appended “vulgo *Morio*,” “vulgo *Satyrus*,” &c., to some of his descriptions in the first edition of the “*Fauna Suecica*” (1746), he did not regard these as specific names. In the eighth edition of the “*Systema Naturæ*” (1753), I find under each genus a list of the species described and named in the “*Fauna Suecica*,” ed. i, mostly with the same names. In *Syst. Nat.*, ed. x (1758), p. 481, I find the following note: “*Trivialia nomina nonnulla, in Faun. Suec. quondam vage imposita, mutavi, ut conformia evaderent per singulos ordines.*” Some of these rejected names (called “trivial” by Linnæus himself, = “specific” in his phraseology), were subsequently adopted by Esper, Retzius, and others. I admit that the date of 1767 (*Syst. Nat.*, ed. xii), sanctioned by the British Association as the commencement of our nomenclature, cannot be defended, because the species then described by Linnæus must be identified by descriptions published by him in 1761 and 1764. It must, however, be observed that few changes of importance in nomenclature were made by Linnæus subsequently to 1758, except changing a name which had been used twice in a genus, or sinking one of two synonyms, unfortunately, generally, the earliest. Therefore, if we go beyond 1758 (not 1767) for specific names of *Lepidoptera*, we should really find ourselves in chaos; and, in alluding to Aristotle, I did not mean more than this. It is assumed that “to draw the line” is to yield the main point in dispute; but the line cannot be drawn further back than the commencement of systematic nomenclature itself; i. e., the works of Linnæus. The controversy hinges mainly on the question whether the knot of synonymy should be cut or untied.

Mr. Briggs assumes that the older name has generally been changed for the better; but in most cases it has been changed for one or other of three reasons, of each of which I quote an example from Doubleday’s Catalogue: 1, imperfect information, *Hadena assimilis*, Doubl., corrected into *Crymodes exulis* in the addenda; 2, capricious changes, *Chortobius*, Guen. = *Cænonympha*, Hübn., for which Guenée is responsible; 3, names retained in error, *Erebia Medea*, W. V. (= *æthiops*, Esp.) named, but not described in W. V. I have fallen into this last error in my own work.—W. F. KIRBY, Dublin, *August 2nd*, 1871.

Review:

A SYNONYMIC CATALOGUE OF DIURNAL LEPIDOPTERA, by W. F. Kirby. 8vo, 690 pp. London: John Van Voorst, 1871.

It is well known that Mr. Kirby has for some years been engaged in the compilation of the volume now under consideration, and we congratulate him upon the completion of his gigantic undertaking. That the term we use is fully justified will readily be admitted, when we state that the described species of Butterflies now reach the enormous number of 7,700, and that, with the synonymy, the number of references is estimated at 10,000. It is not our purpose here to criticise the author’s views as to genera and species, nor to enter into an examination of the nomenclature adopted; we look at the book simply from the point of its being an index to the study of the subject, indispensably necessary to every one engaged in forming

collections of the Butterflies of the world, and having to investigate the subtle, and, as it seems to us, often too finely-drawn, distinctions made by modern Entomologists. The question of specific right and the adoption of names must be left, to some extent, to individual opinion. The main object of every working Entomologist is to find out as readily as possible what others have done before him, and to attain this end the things most necessary are Catalogues, such as this of Mr. Kirby's; for the study of any group of insects without a Catalogue is as difficult as would be the acquirement of a language without a dictionary. We can scarcely suppose that Mr. Kirby has escaped the commission of errors, perhaps numerous, in compiling a work of such extent; but, be that as it may, Lepidopterists will not fail to accord to him the credit of having produced a Catalogue which must form the ground-work of all succeeding compilations of a like nature.

We must, however, protest against Mr. Kirby's dictum, as expressed in his preface, that "the name of every genus which has been previously employed in either Zoology or Botany should (be) changed;" believing this rule to be most pernicious, and that it is sufficient if it be applied to Entomology only; and even then we should be sorry to take the initiative in many cases. Also we protest against the application by Lepidopterists (including Mr. Kirby) of the term "Diurnal" *Lepidoptera* to Butterflies exclusively, as conveying a false impression; more especially as there are other terms already existing which quite meet the strict requirements of the case.

THE SPECIES OF THE TRICHOPTEROUS GENUS *PLECTROCNEMIA*.

BY E. M'LACHLAN, F.L.S.

In 1864, in vol. i of this Magazine (pp. 25—31), I gave a short sketch of the British species pertaining to *Polycentropus* and allies, including *Plectrocnemia*. I was then acquainted with only one species of the latter genus, and had added nothing to my knowledge when I published the "Trichoptera Britannica" in 1865. I then knew of only one species as existing in Europe.

A recent examination of the exponents of the genus in my Continental collection, has made evident to me the fact that I have *three* well-marked European species; and, moreover, that *two* of these exist in Britain. And yet, in appearance, all three present scarcely appreciable differences in their general characters. But certain slight—almost indescribable—peculiarities in some individuals, induced me to make a closer examination; and I find that (at any rate for the males) there are structural differences in the anal appendices of a most marked nature. I proceed to characterize the three species, with the remark that it behoves those Entomologists—British and Continental—to whom I have distributed types of *Trichoptera*, or for whom I have determined their species, to compare their insects with the diagnoses and notes now given.

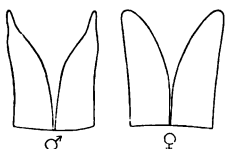
1. *Appendices inferiores maris valde elongatæ, lanceolatæ, acutæ, paullo curvatæ, gradatim paullo divergentes, ad basin approximatæ; marginis interioris dimidio apicali obliquo.*P. conspersa, Curtis.

2. *Appendices inferiores maris ad basin latæ, valde approximatæ, extus in processum elongatum, sub-cylindricum, in medio geniculatum, ad apicem paullo dilatatum, productæ.*P. geniculata, sp. n.

3. *Appendices inferiores maris breves, sub-ovales, obtusæ, vix divergentes, ad basin approximatæ.*P. brevis, sp. n.

PLECTROCNEMIA CONSPERSA, Curtis, Hag., M'Lach. (*senex*, Pict.).

♂. From the middle of the margin of the last dorsal segment proceeds a longly triangular pointed process; under this, and projecting beyond it, is a still longer upper penis-cover, appearing as a continuation of the process. Append. super. short, broad, sub-quadrate, or semi-ovate; externally, at the base, is a rounded tubercle. App. intermed. placed more internally, longer than the app. sup., narrow at the base, but spoon-shaped at the apex. App. infer. inserted nearly close together in the middle of the margin of the last ventral segment, afterwards gradually diverging, very long, gradually curved upwards, lanceolate and acuminate, the tips acute, concave internally.



♀. The abdomen ends in a blunt tube, notched at the apex; at the ventral base of this tube are two short, divergent lobes, which do not extend to the apex of the tube.

In fresh specimens (especially of the ♀) the sides of the thorax are strongly clothed with black hairs, and on the anterior wings are decided, more or less oblique, fuscous markings.

Probably generally distributed throughout Europe; the common species in Britain. A detailed account of the structure of the ♂ sexual apparatus is given by Hagen, in Stett. Ent. Zeit., 1860, p. 285. In dry examples I cannot define the more internal organs of this apparatus.

Curtis's types are in Australia, hence a re-examination cannot be made of them. Pictet's type (*senex*) in the British Museum is reduced to a fragment. Stephens' types (*senex*) are two males and one female: the former both pertain to the second of my species (*geniculata*), the latter is what I consider the female of *conspersa*. There thus remain the questions whether Curtis's and Pictet's species be really identical, and also whether one or both of them represent my *conspersa*. This latter is certainly the most common and widely distributed species; and taking this into consideration with the fact that I possess *all three* from Switzerland, I think I am warranted in assuming that the species noticed by Curtis and Pictet are identical, and that my *conspersa* was intended by them.

PLECTROCNEMIA GENICULATA, nov. sp.

- ♂. From the middle of the margin of the last dorsal segment proceeds an elongate lobe, truncate at the apex, depressed and concave above (this lobe is probably in reality the upper penis-cover). Append. super. almost as in *conspersa*, but more rounded. App. intermed. spiniform, long and curved, proceeding from either side of the base of the dorsal lobe. App. infer. very broad at the base, occupying the whole of the margin of the last ventral segment, and so close together as to leave a scarcely perceptible space between them; externally each is extended into a very long, slender, sub-cylindrical process, which is strongly geniculate in the middle (appearing to be two-jointed), the apical half strongly directed inwards, so that the tips of the opposite processes nearly meet, the apex flattened and somewhat dilated.

♀. Unknown to me.

I fail to find any characters in markings, &c., whereby to separate this species from *P. conspersa*, notwithstanding that the appendices are so totally different in structure. But no doubt a series of fresh individuals of both species would present some slight external differences.

I have a British example of this, of which I do not know the exact locality; and another from Sedrun, in Switzerland, taken by Mr. Stainton, at the end of July. Two other British examples are in Stephens' collection, as noticed above.

PLECTROCNEMIA BREVIS, nov. sp.

- ♂. From the middle of the margin of the last dorsal segment proceeds a short, broadly triangular process; from beneath proceeds a very large, testaceous, shining, upper penis-cover, strongly curved downwards, and dilated towards the apex; the apical half of this cover is either double, or else it is very deeply canaliculate above. Append. super. very short, broader than long, the margin excised. App. intermed. short, ovate, appearing to proceed from beyond the excision of the app. sup., and to be placed almost under the penis-cover. App. infer. formed somewhat like those of *P. conspersa*, but half the length, only slightly acuminate and scarcely acute; the upper penis-cover (in dead individuals) is often curved down between these app. inf.

♀. Unknown to me.

When compared with the two foregoing species this seems to be slightly smaller; the dark streaks of the anterior wings are less evident, and the wings are closely sprinkled with small, rounded, golden spots, such as are usual in species of *Polycentropus*. In the neuration the first apical fork in the anterior wings is evidently, if only slightly, shorter than in the other species.

I have five males taken by Mr. Stainton at Sedrun, in Switzerland, at the end of July.

In order to render this notice of the genus more complete, I may mention that Hagen, in Stett. Ent. Zeit., 1858, p. 121, indicates two species (without name or description) from Archangel and the Kirgise Steppe respectively, as probably distinct from *conspersa*; and I possess one female, in very bad condition, from North America (possibly scarcely pertaining to the genus), in which fork one of the anterior wings extends to the discoidal cell, and with the third and fourth joints of the maxillary palpi much shorter.

Lewisham: August, 1871.

REMARKS ON THE RE-DISCOVERY OF THE LARVA OF *ANTISPILA RIVILLEI*.

BY H. T. STANTON, F.R.S.

This most interesting fact, the re-discovery of an insect, which, though described with great minuteness in 1750, has always subsequently escaped detection, stands I believe perfectly unique in the history of our science. Four generations had passed away, but still the magician whose wand was to wake the Sleeping Beauty from her prolonged slumbers had not appeared.

The insect had only been observed at Malta, and in the heat of the summer season; but it was reasonable to expect that it might occur in other parts of Italy, and in the South of France;—and possible that it might occur at a more temperate season.

The larvæ of *Antispila Rivillei* were found the first week in October, 1871, by the Hon. Beatrice de Grey (sister of Lord Walsingham, who is now collecting the Micro-Lepidoptera of California and Oregon) in a vineyard at Massa di Carrara, in Italy; and, recognising at once the insect from its peculiar characters, some specimens were thoughtfully forwarded to me for identification.

Unless there are two species of the genus *Antispila* on the vine (as we have two in England on the dogwood, *Cornus sanguinea*), there seems no reason to doubt but that these are the larvæ of the long lost insect, first noticed in the 'Mémoires de Mathématique et de Physique présentés à l'Académie Royale des Sciences,' vol. I, p. 177 (1750), and this notice subsequently reproduced by Goeze, in the 'Naturforscher,' Stück 4, p. 16 (1774), by Fuessly in the 'Magazin der Entomologie,' Band II, p. 167 (1779), and then by myself first in the 'Transactions of the Entomological Society of London,' second series,

vol. III, p. 87 (1855), secondly in the 'Annales de la Société Entomologique de France,' 1855, p. 211, and thirdly in the 'Tineina of Southern Europe,' p. 309 (1869).

I was from home when these larvæ reached this country, but my friend, Mr. J. W. Douglas, kindly attended to them in my absence, and has made the following description:

"*Larva* $1\frac{1}{2}$ lines long. Head deeply inserted in the second segment, which is the widest of all, both brown; then the body is gradually "and slightly smaller to the apex; the segments pale amber-yellow.

"*Mine* long, always starting from a rib, much contorted, often at "first in long reaches, ending always in a large blotch; "frass" continuous, black.

"*Cocoon* oval, formed between the cuticles, which are eaten through "all round the circumference at one end, but maintained *in situ* by a "silken net work of filaments."

The mine differs essentially from those of the dogwood feeders, *Antispila Pfeifferella* and *Treitschkiella*, in commencing with a slender, linear, Neptuliform gallery: neither is the ultimate blotch as large as in the dogwood species; this probably is in a great measure owing to the vine leaf being so much thicker than a dogwood leaf, and consequently more sustenance is afforded in a smaller sized excavated blotch; but the most singular thing is the small size of the oval cases or cocoons cut out by the larvæ; these are considerably smaller than those of the smallest dogwood species, *Antispila Treitschkiella*, and much smaller than those figured in 1750 (reproduced in my volume of the 'Tineina of Southern Europe'). The cases of the vine feeder all bear longitudinal ridges, which we do not perceive in the cases of the dogwood feeders.

These October larvæ of *Antispila Rivillei* will probably not produce the imago till May or June; and there will be some anxiety, lest, as is so often the case with similar larvæ, they may all perish during the winter months.

By a singular coincidence, at the very time I was pondering over the extraordinary re-discovery of this larva, I received from Lord Walsingham some aspen leaves from Fort Klamath, Oregon, so maltreated by the larvæ of some unknown species of *Antispila* (or *Aspidisca*) that their appearance is most singular. It would really seem as if the problem had been:—"Given an aspen leaf, to find the greatest number of oval cases that can be punched out of it."

Mountsfield, Lewisham: November 14th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 10).

BY H. W. BATES, F. Z. S.

Genus STOLONIS.

Motschoulsky, Bull. Moscou, 1865, No. 4, p. 230.

In general form, the species of this genus resemble certain *Anchomeni* (e. g., *A. albipes*), being of slender figure and glossy black or pitchy colours; but the three dilated joints of the anterior male tarsi being obliquely produced interiorly betray a much closer relationship with *Loxandrus*. This character, although the most important one offered by these insects, was omitted by Motschoulsky. The genus consists of a considerable number of species, recognizable by the abruptly rounded thorax, generally constricted into a narrow waist at the base, and by the white colour of a portion of the antennæ, a feature common to many distinct genera of *Carabidæ* from tropical America. Like the *Loxandri*, they have a single large puncture on the third interstice of the elytra, and no short scutellar stria. The anterior tibiæ in some of the species are quite as slender as in the typical *Anchomeninæ*; a character which would bring them within that sub-family, according to the system of Erichson and Lacordaire. The mentum has an obtuse tooth in the small, shallow emargination; the ligula is triangular, with the upper edge broad and straight, furnished with two bristles, and surpassed in length by the narrow membranous paraglossæ. The palpi and three basal joints of the antennæ are naked. The genus is very closely allied to *Oxycrepis*, Reiche,* in which the elytra are thickly punctured and pubescent. This character suggests a relationship with the *Lachnophorinæ*; and, in fact, one species, at least, of *Stolonis* (*Anchomenus elegans*, Dej.) was placed in *Anchonoderus* by Reiche; both genera, however, differ from the *Lachnophorinæ* in their naked palpi and the three basal joints of their antennæ, besides their oblique fore tarsi in the ♂. *Oxycrepis* is distinguished from *Stolonis* by the ovate thorax, not constricted or much narrowed behind, as well as by the densely punctured elytra.

The species of *Stolonis* are found under decayed leaves, &c., in moist situations, and the genus constitutes one of the characteristic forms of *Carabidæ* of tropical America.

STOLONIS NOTULA, Motsch., *loc. cit.*, Venezuela.

STOLONIS FULVOSTIGMA, n. sp.

St. notulæ (Motsch.) *similis*, at major; *piceo-nigra*, *iridescens*; *capite lævi*, *pone oculos modice angustato*, *oculis prominulis*; *thorace antice lato, rotundato*, *basi con-*

**Oxycrepis leucocera*, Reiche, described from Venezuela, appears to occur also at Bahia in Brazil, a specimen I obtained from Mr. Edwyn Reed's collection made in that province agreeing precisely with Reiche's description.

stricto, ibique sine margine distincto laterali, basi suprà haud profunde punctato, foveâ utrinque vix impressâ; elytris profunde striatis, striis (apice exceptis) lateraliter punctatis, suturâ prope apicem maculâ communi rotundatâ, fulvâ, notatâ, marginibus deflexis rufo-piceis; antennarum articulis 1—3 rufo-testaceis, 4—6 et 9—11 vel 10—11 nigris, 7—9 vel 7—10 albis; palpis, labro pedibusque rufo-testaceis; femoribus postice medio nigris; corpore subtus lævi. Long. $4\frac{1}{2}$ lin.

Evidently closely allied to *St. notula*, Motsch., from Venezuela, which is, however, much smaller ($3\frac{1}{2}$ lin.). Motschoulsky well describes the striæ as "*lateraliter punctatis*," i. e., the punctures lie on the outer side of each stria, so as to crenulate the next interstice: a character which is shown also by the *Lachnophori*.

Rio Janeiro; taken by the late Mr. Squires.

STOLONIS LEUCOTELA, n. sp.

St. fulvostigmati proxime affinis, differt antennarum articulis 7—11 albis; gracilior, nigra, thorace antice valde rotundato, postice coarctato, marginibus lateralibus prope basin distinctis tenuibus, basi grosse parce punctato; elytris fortiter striatis, striis minus grosse basin versus lateraliter punctatis, marginibus deflexis rufo-piceis, suturâ prope apicem maculâ communi rotundatâ, fulvâ, notatâ; antennarum articulis 1—2 piceo-rufis, 3—6 nigris, 7—11 albis; labro palpisque rufo-testaceis; pedibus flavo-testaceis, femoribus postice medio nigris; corpore subtus lævi, nigro, nitido.

Long. $3\frac{1}{2}$ lin.

St. Catherine, S. Brazil; from M. Meyer-Dür's collection.

STOLONIS LEISTOIDES, n. sp.

Nigro-picea, iridescent, elytris immaculatis; antennarum articulis 1—3 rufo-piceis, 7—9 decimique dimidio basali albis, reliquis fuscis, labro palpisque rufo-testaceis, pedibus albo-testaceis; capite parvo, oculis magis prominulis; thorace antice valde rotundato, postice coarctato, ibique sine margine laterali, sulco transversali prope basin punctulato; elytris fortiter striatis, striis lateraliter punctatis; corpore subtus piceo-nigro. Long. $3\frac{1}{2}$ —4 lin.

Resembles much the *Leisti* in general outline, and is distinguished from allied species by the transverse depression close to the basal margin of the thorax, which leaves a more or less distinct raised basal rim.

Ega and R. Tapajos, Amazons.

STOLONIS LEVICOLLIS, n. sp.

St. leistoidi proxime affinis, differt thorace basi suprà plano, in foveis solùm pauciter punctato; elytris suturâ postice marginibusque deflexis rufo-piceis; thorace breviori, antice magis abrupte angustato. [Antennæ desunt.] Long. $3\frac{1}{2}$ lin.

Lower Amazons; one specimen.

STOLONIS APICATA, n. sp.

Minus elongata, sed robusta; picea, iridescent; thorace antice rotundato, postice coarctato, ibique sine margine laterali, basi suprà passim punctato; elytris fortiter

striatis, striis fortiter lateraliter punctatis, interstitiis convexis, marginibus deflexis abdomineque rufo-piceis; antennarum articulis 1—3 rufo-piceis, 4—6 et 11 nigris, 7—10 albis; labro, epistomate, palpisque rufo-testaceis; pedibus flavo-testaceis.

Long. 3 lin.

Ega, Amazons.

STOLONIS ELEGANS.

Anchomenus elegans, Dej., Spec. Gen., v, p. 725.

Anchonoderus id., Reiche, Rev. Zool., 1843, p. 39.

Baron Chaudoir, the possessor of Dejean's types, and whose opinion on such a subject otherwise is final, informs me that this species belongs to *Stolonis*.

New Granada, near Carthagena.

STOLONIS GRACILIS, n. sp.

Minor, gracilior, thorace quam in cognatis paulo angustiore, postice paulo minus subitò coarctato; nigro-picea, iridescens, thoracis margine laterali ad basin continuato, basi pauciter grosse punctato; elytrorum suturâ postice margineque laterali deflexo fulvo-piceis; antennarum articulis 1—3 rufo-piceis, 4—6, 7½ dimidio, et 11 nigris, reliquis albis, pedibus flavo-testaceis; oris partibus rufo-testaceis. *Long. 2½ lin.*

Doubtless closely allied to *St. elegans*, to which Dejean ascribes somewhat differently coloured antennæ. The thorax is much less perfectly round than in *St. apicata*, *leistoides*, *fulvostigma*, &c., being rather more gradually narrowed anteriorly and posteriorly; and the lateral rim forms a small projecting angle at the commencement of the constricted base..

R. Tapajos.

STOLONIS OVATICOLLIS, n. sp.

Gracilis, angustata, nigra, iridescens; capite pone oculos gradatim attenuato, deinde in collum distinctum constricto; thorace ovato, postice usque ad basin angustato, sine stricturâ, margine laterali ante basin dentiformi, magis reflexo, angulato, basi (foveis pauciter punctatis exceptis) lævi; elytris fortiter punctato-striatis; oris partibus rufo-testaceis; antennarum articulis 1—3 rufo-testaceis, 4—7 nigris, 8—11 albis; pedibus flavo-testaceis. *Long. 3—3½ lin.*

Also closely allied, apparently, to *St. elegans*, from which it differs in showing no distinct red tinge or mark along the posterior part of the suture. The constriction of the neck forms a transverse groove.

Ega.

ANCHOMENUS DIMIDIATICORNIS, Dej.

This species, according to its description, would seem to belong to *Stolonis*; but in the character of its alternate interstices being punctured it differs from all the species known to me.

Kentish Town: November, 1871.

DESCRIPTION OF A NEW SPECIES OF *SYNCALYPTA*, FROM GREAT BRITAIN.

BY D. SHARP, M.B.

SYNCALYPTA HIRSUTA, nov. spec. *Breviter sub-ovata, convexa, nigra, sub-squamulosa, setis griseis, erectis, clavatis, longioribus adspersa; elytris striatis, striis obscure punctatis, suturali postice profundâ; antennis pedibusque obscure rufis.* Long. $1\frac{1}{2}$ lin.

This *Syncalypta* is so closely allied to *S. setigera*, that I shall content myself with adding to the above diagnosis a notice of the differences between the two. They are of about the same size and form, but the erect setæ with which *S. hirsuta* is clothed are longer, thinner, less clubbed, and lighter in colour than those of *setigera*; the depressed scales of the elytra are much less numerous and distinct than in *setigera*, and not variegated, as in that species; but this may, perhaps, be owing to the fact that none of the individuals of *S. hirsuta* from which my description is made are in good condition; the depressed scale-like hairs with which the prothorax is clothed are much longer in *hirsuta* than in *setigera*; and, when the insects are cleaned and denuded of their clothing, it is seen that the punctuation of the thorax is much coarser in *hirsuta* than in the other species: the antennæ and legs are lighter in colour in *hirsuta*.

In both these species the striæ of the elytra are peculiar, and consist of lines of elongate punctures, placed so close one behind another that the separation between each is but little apparent.

S. hirsuta appears to be widely distributed in the South of England, though rare in collections: *setigera* I have only seen from the neighbourhood of Dumfries.

Stephens describes two large species of *Syncalypta* as found in England, *maritima* and *setiger*: neither of the descriptions is applicable to *S. hirsuta*, but both appear to me to appertain to *S. setigera*.

Eccles, Thornhill, Dumfries:

November, 1871.

NEW BRITISH *TRICHOPTERYGIA* (WITH DIAGNOSES OF NEW SPECIES).

BY THE REV. A. MATTHEWS, M.A.

The following *Trichopterygia* must be added to the British List; but, as a full description of each species will very shortly be published in my Monograph of the Section, I will not at present do more than give a few of their principal diagnostic characters.

PTENIDIUM KRAATZII, n. s.

Differs from *Pt. formicetorum* in its longer and narrower shape, smaller size, and much deeper sculpture, especially on the head and thorax.

I have two specimens of this insect, taken by the late Mr. Foxcroft in Scotland.

PTENIDIUM ATOMAROIDES, Mots.

This species is easily distinguished from *Pt. evanescens* by the smaller size of its head and thorax, and much longer and broader elytra.

I received a *Ptenidium* some time ago from Mr. Crotch, taken by himself (I believe near Brandon), which clearly belongs to this species.

TRICHOPTERYX FUSCULA, n. s.

L. c. $\frac{1}{8}$ lin. Short, quadrate, covered with long brown hairs. Differs from *T. brevis* in its parallel form and long slender antennæ.

This peculiar and distinct species I found some time ago near Gumley.

TRICHOPTERYX LONGULA, n. s.

Differs from *T. picicornis* in its shorter and narrower thorax, longer and more slender antennæ, and closer and finer sculpture.

Two specimens of this insect have been taken by myself in this part of the kingdom, and two others by Mr. Wollaston near Tonbridge.

TRICHOPTERYX RIVULARIS, Allibert.

Differs from *T. Montandonii* in its more elongate form, longer thorax, elytra more contracted at their apex, and disposition of the sculpture.

I have long hesitated to separate this and some other allied forms from *T. Montandonii*; but am now convinced that to preserve any specific uniformity their separation is inevitable. *T. rivularis* is not uncommon in this country.

TRICHOPTERYX EDITHIA, n. s.

L. c. $\frac{1}{8}$ lin. Elongate, convex, griseous-brown, covered with long sericeous pale hairs, head large and wide, eyes not prominent, antennæ very long and slender, bright yellow; thorax moderate, sub-quadrate, with the sides much rounded, widest near the middle, covered with small tubercles irregularly arranged, with their interstices shining and deeply reticulate, posterior margin depressed and slightly reflexed, with its angles produced and acute; elytra rather longer than the

head and thorax united, oval, much narrower than the thorax at the shoulders, widest at the middle, with their apex moderately rounded, deeply asperate in close wavy rows; legs long, slender, bright yellow.

I give the above short description of this very distinct and pretty species in order to assert my claim to priority. I have named it *Edithia* in honour of its captor, Mrs. Wollaston, who, with the assistance of Mr. Wollaston, made a numerous and very interesting collection of these insects, in the neighbourhood of Tonbridge, during the past summer.

TRICHOPTERYX CANTIANA, n. s.

Differs from *T. lata* in having its thorax much less dilated at the sides, and the antennæ rather shorter, more robust, and entirely black, also in its deep black colour and very short pubescence.

Several specimens of this insect were taken by Mr. and Mrs. Wollaston at Tonbridge.

Gumley: November, 1871.

NOTES ON THE ECONOMY OF SOME BRITISH SPECIES OF PTEROPHORIDÆ (ISODACTYLUS, TEUCRII, PLAGIODACTYLUS, AND LIENIGIANUS).

BY C. G. BARRETT, ASSISTED BY W. BUCKLER.

PTEROPHORUS (PLATYPTILUS) ISODACTYLUS.

In the autumn of last year, I picked up a few specimens of *Pterophorus isodactylus* in a marsh by the river side, and therefore looked over the place early this summer for plants of some species of *Senecio*.

The grass, however, was rank and growing rapidly, and *Senecio* hard to find, and it was not till June 21st that, extending my researches into an unexplored corner, I found an ugly, scrubby-looking species—*Senecio aquaticus*—growing in some plenty. My search for the larva was, however, cut quickly short by the appearance of a specimen of the moth already out, and then and afterwards I secured a good many, the *females* being so exceedingly sluggish, that I only took two specimens of that sex. I had, therefore, to wait for the second brood to make the acquaintance of the larva; but, according to the contrary nature of things in general, just as the moths must have laid their eggs, the marsh was mowed, and, although the farmer had distinctly promised to leave a patch of the plants for me, the whole of them were cut down. This was discouraging enough, as the eggs had not had time to hatch, and *must* have been nearly all destroyed, whereas, had the larvæ been feeding, some of them would have been sure to find their way from the withering plants to portions which remained growing.

But, not to be beaten without an effort, I went to work on August 10th, and after a long search found one larva mining a shoot of the ragwort, and sent it at once to Mr. Buckler. A fortnight later, I found several larvæ and a few pupæ, from which the moths began to emerge on August 20th.

The larva of the second brood, when young, mines one of the smaller shoots of *Senecio aquaticus* near the buds, afterwards it crawls further down, entering one of the larger branches at the axil of a leaf (frequently devouring the tender side shoot), and bores down the interior, feeding on the pith till nearly full grown, when it again deserts its burrow, and proceeds to the thick main stem of the plant, which it enters, and there feeds up, hollowing out a space in which to assume the pupa state. In every case a round hole is left for the extrusion of excrement, and, in the final burrow, this is placed exactly against the head of the pupa, so that there is no difficulty about the egress of the perfect insect. This pupa is angular and destitute of hairs, like those of the allied species (*trigonodactylus*, *ochrodactylus*, &c.), but lies perfectly free in the burrow, the anal segment not being attached to the usual button of silk.

The larvæ of the first brood must feed in May, in the young shoots, then just beginning to grow, the perfect insect appears in the latter part of June, and again in August and September.

The larva, when full-grown, is about three-eighths of an inch in length, rather thick and plump, tapering much just at each end, the head small, the legs short and placed much under the body, the skin smooth, shining, and pellucid; it is of a watery, greenish tint, showing a dark greenish dorsal vessel; the sub-dorsal stripe is also darker green than the ground colour, and this is bordered above by an opaque whitish stripe, which lies beneath the skin, and shows partially through its glossy surface; another such faint whitish stripe shows through along the side, and below that is another, somewhat inflated, on which are the spiracles; the head is black, and so also is a narrow plate across the middle of the back of the second segment, which is divided in the centre by a thin line of the pale ground colour; the anterior legs are black; the tubercular dots above are small and black, those along the spiracular region are rather larger, and those on the front part of the thirteenth segment are very much larger still; a black plate is on the anal flap: it is noteworthy that such tubercular dot in this *Pterophorus* has but a single hair. The pupa is smooth, nearly three-eighths of an inch in length; the wing and leg cases meeting in a point low down the abdomen, and in close contact with it; in colour, it is pale whitish-ochreous, the abdomen a little deeper tinted, it is generally striped and marked with brown, particularly on the head and back of the thorax; the dorsal marking is a series of brown acute triangles. — W. B.

The diversity in the habits of the larvæ and pupæ of the *Pterophoridae* is very great. *Ochrodactylus* (*Bertrami*) devours the hearts of the shoots of *Achillea Ptarmica* and *millefolium*, eating down into the stem, and assumes the pupa state on the plant. *Isodactylus* lives as larva and pupa within the stems of *Senecio*. *Trigonodactylus* devours the middle of the seed-heads of *Tussilago*, drawing together the wings of the seeds so as to form a sort of cocoon, in which it assumes the pupa state. *Teucrii* withers the young shoot of *Teucrium*, to feed on the drooping leaves. *Bipunctidactylus*, I am informed, feeds in the flowers of *Scabiosa succisa*, and *Loevii* on seeds of *Erythrea centaurium*. *Plagiodyctylus* hollows out shoots of scabious, en-

tering them at the side, but becomes a pupa externally. *Fuscus* eats off the buds of *Veronica chamædrys*, and also becomes a pupa on the plant. *Pterodactylus* eats the flowers of *Convolvulus*. *Lienigianus* gnaws the leaves of *Artemisia*, leaving one membrane and rolling up the other, also making itself a tent of the leaf. *Microdactylus* feeds on the flowers of *Eupatoria cannabinum*, but enters the stem to become a pupa. *Galactodactylus* eats holes in the leaves of *Arctium lappa*, but rolls back all the woolly covering of the leaf to the edge of the hole as it eats, and assumes the pupa state close to the surface of the under-side in one of the deep depressions formed by the union of the ribs; and *pentadactylus* devotes itself to eating off the young shoots and leaves of *Convolvulus sepium*, just as it is making a start to smother our fruit bushes with its luxuriance. There is all this variation in the few species with which I am acquainted: it would be interesting to know something of the habits of the rest.

PTEROPHORUS (OXYPTILUS) TEUCRII.

As *Pterophorus (Oxyptilus) teucris* is only single-brooded, it allows itself more leisure for feeding than some of its congeners, and may be found commonly in the larva state from the middle of May till the end of June.

The mode of life of this larva is sufficiently curious. It gnaws a deep round hole in the side of the stem of a young shoot of *Teucrium scorodonia*, stopping the flow of sap, and causing it to droop, then crawls (slowly enough) to the heart and eats portions of the younger leaves, biting them clean through like ordinary larvæ, and never, I believe, gnawing the surface of the leaf like some of its congeners, nor entering the shoot like others. It does not confine itself to one shoot, but, after eating bits of several leaves, goes to another, which it causes to droop in the same way. In wet weather the shoots will recover and raise themselves, but if the sun is hot and the weather dry, they wither, and serve (like the shoots of spindle when mined by the larva of *Hyponomeuta plumbella*) as signal flags to show where a larva is to be found.

In confinement, the larva makes no attempt to wither the shoot, but eats the young and full-grown leaves indifferently. Its principal object is, evidently, shelter from the sun, and it is so sluggish that it can hardly ever be seen to move when light is upon it. It is liable to a queer disease, which causes it to become distended, and die in the form of a little hairy bladder. Great numbers die in this way, and from some of them ichneumons emerge, but I think by no means from all.

The full-grown larva is five lines in length, cylindrical, tapering a little behind, and a little in front from the second segment to the head, which is a trifle smaller and rounded; the segments appear very plump from the divisions being deeply cut; it is of a pale glaucous-green colour, with dorsal and sub-dorsal lines of full green; the tubercles are brown, bearing fascioles of numerous white hairs, those on the thoracic segments very spreading, and it is altogether very hairy.—W. B.

The pupa-state seems to be assumed under any convenient object close to the ground, as the hairy pupa is not often to be found on the plants.

I have made these notes upon the larva of *teucris* because its peculiar habits interested me: but the merit of its discovery, in the first instance, belongs to Mr. N. Greening, of Warrington, who has already (E. M. M. iv pp. 16 and 39) given a description (under the name of *hieracii*) differing very slightly from my own.

PTEROPHORUS (MIMÆOPTILUS) FLAGIODACTYLUS.

On May 19th last, I went over to my favourite chalk-pit, determined, if possible, to make the acquaintance of the larva of *Pterophorus flagiodactylus*. The sloping banks of the pit are covered with a profusion of wild flowers, and among them *Scabiosa columbaria* and *arvensis* grow in abundance.

At this time, these plants were throwing up strong shoots, and growing so rapidly, that the infested portions of the plant were almost directly covered, and concealed by the healthy shoots, so that I had no little difficulty in discovering the whereabouts of the larva.

The mode of life is this:—the larva gnaws a hole in the side of a young shoot, and, working up, devours its anterior substance, proceeding from shoot to shoot till full-fed, when it attaches itself to the plant by the anal segment, and becomes an angular, bright green pupa, beautifully edged and pointed off with pink, and entirely without hairs. The favourite food-plant is *Scabiosa columbaria*, but *S. arvensis* serves as a substitute, and in the fens the moth is common among *S. succisa*.

This species is double-brooded, appearing in May and June, and again in August, the larva feeding in May and doubtless again in July, but in the latter case the mode of feeding has still to be observed, as the plants are then well grown.

The larva of *flagiodactylus*, when full-grown, is about five lines in length, of moderate proportion, neither stout or slender, tolerably cylindrical, tapering a little posteriorly; the head rounded and rather smaller than the second segment, of a very pale colour and shining; the body is very pale olive-yellow, with a conspicuous brown dorsal line attenuated at each end, and with two faint lines along the side a little deeper than the tint of the ground colour; on the lowest line are the black spiracles each on a slight swelling; the tubercular warts are of the pale ground colour and furnished with rather long curved whitish hairs; the head and other parts of the body emit short hairs.—W. B.

My friend Mr. Buckler has figured the larva of this and other plumes, and has kindly consented to describe them for me.

PTEROPHORUS (LEIOPTILUS) LIENIGIANUS.

Early in July, 1870, in a country lane some miles from Norwich, I chanced to find a plant of *Artemisia vulgaris*, the leaves of which were eaten in a fashion different to anything I had before seen, so curiously, indeed, that I could not at the time imagine to what *family* even the larva could belong, and to make the matter worse, it appeared to be quite deserted. At home I again examined the plant, but finding nothing, threw it aside, and was not a little

surprised, a few days afterwards, at finding a specimen of *Pterophorus Lienigianus* at rest on the ceiling. The riddle was therefore solved, as it was clear that the pupa had been hidden so well that I had overlooked it.

I was too busy then to go after the perfect insect, but promised myself a pilgrimage in June of the present year to look for the larva. However, on May 26th, when returning from an unsuccessful search for *Trifurcula pulverosella* in its haunt among the crab bushes in a neighbouring lane, I caught sight of a bladdery-looking leaf of *Artemisia vulgaris* which I instantly recognized, and had the exceeding satisfaction of finding the pretty little hairy larva of *Pterophorus Lienigianus* very much at home, with several more, occupying other leaves of the same plant.

This larva has the most singular mode of life of any plume larva with which I am acquainted. When young, it gnaws oblong blotches near the tips of upper leaves of the *Artemisia*, leaving the cuticle of the upper-side entire and nearly transparent, eating the parenchyma, and carefully rolling back the downy skin of the under-side to the edge of the blotch (as is done by the larva of *galactodactylus* on burdock). These blotches are seldom more than half-an-inch long, but generally there are two or three of them side by side. When about one-fourth grown, the larva moves down to a lower leaf, which it draws together, uniting the tips underneath, and carefully sewing together the edges of the segments, so as to make a secure little tent, inside which it feeds as before, only making larger blotches side by side, between the ribs of the leaf, until the greater part of the parenchyma is devoured, after which, it deserts this habitation, makes another lower down, and so on, constructing four or five tents before becoming full-grown. Then, disdaining to make use of the larval habitation as a protection for the pupa, it descends towards the ground, and becomes a hairy pupa on the lower part of the stem, or on some bit of stick or other convenient object.

The pupa has, strongly developed, the curious power (shared more or less by most of those of the *Pterophoridae*) of throwing its head back over its tail with considerable force. Thus, anything touching the anal segment is pretty certain to receive a smart rap—delivered backwards—from the head of the pupa.

Every one must have observed that when a plume emerges, the pupa bends back so as to allow the moth to use its long legs as soon as they are freed from the envelope.

The deserted tent is a curious object, with its oblong windows edged with white down, and its seams made as neatly as a spider even could do it. In the case of large leaves, only one of the divisions is made use of, the whole leaf being beyond the powers of the architect. In confinement, these larvæ, like those of *teucree*, throw off their protective habit, and make no tent, but simply feed under the leaves in their usual fashion. Unlike *teucree*, however, they are very easy to rear, as, with a little care, nearly every specimen produces the perfect insect.

I found larvæ feeding from time to time, from May 26th till June 20th, and by that time, the more forward specimens had begun to emerge. I have seen no indication of a second brood in the year.

The full-fed larva is little more than three-eighths of an inch in length, cylindrical, though tapering a little behind; the head a trifle smaller than the second segment, and rather rounded, greyish-brown in colour and marked with blotches of blackish-brown on the lobes and between them, and is very shining; the body is pale glaucous-green, and has a very broad dorsal stripe of darker bluish-green, through the middle of which runs an exceedingly fine pale thread of the ground colour; the thin sub-dorsal line is yellowish-white, and just above it is a whitish-grey parallel streak, all these are regularly interrupted at segmental divisions, these divisions are somewhat yellow; the spiracles are whitish ringed with brown; there is a white wart on the hinder part of the side of the third and fourth segments; all the tubercles are whitish, each bearing little fascicles of about four white silky hairs, curved and finely pointed; the ventral surface and legs a little paler than the rest of the ground colour.—W. B.

The perfect insect is rather sluggish, and retiring in its habits. It is pretty common in this neighbourhood, yet, previous to rearing it, I had taken but one specimen, and, one afternoon last July, happening to find, in the corner of a field, a lot of *Artemisia*, which had evidently been infested, I spent a considerable time in beating, kicking, and trampling the plants and neighbouring rank weeds before I could compel two specimens to skulk unwillingly out from among them.

Norwich: 11th October, 1871.

Addition of two species of Cryptophagus to the British list of Coleoptera.—I have much pleasure in calling attention to two species of the genus *Cryptophagus*, which have not yet found a place in our British catalogues. Both are described by that distinguished entomologist, M. Ch. Brisout de Barneville, in Grenier's catalogue. The first is *C. punctipennis*, Bris., allied to *pilosus*, but rather smaller, and readily distinguished by the very coarse, and somewhat distant, punctuation of the basal portion of the elytra, with are clothed with long outstanding hairs, as well as with the usual shorter pubescence. I have found this insect in the fens at Cambridge, and on the Braid Hills, Edinburgh, in each case in a kind of open shed used for storing straw. It is recorded by M. Brisout as occurring among straw at Paris.

The second species is *C. parallelus*, Bris.; an elegant species not to be confounded with any other, by reason of its narrow, elongate, and parallel form; it is also very finely punctured, and clothed with a very fine and very short pubescence. This was taken by me at Rannoch some years ago, and I have since found it in Scotch fir at the Escorial in Spain, so that it is, no doubt, connected with that tree. It is best placed between *dentatus* and *acutangulus*. A specimen given by me to Mr. Crotch was named *parallelus* for him by M. Brisout.—D. SHARP, Eccles, Thornhill, Dumfries, Nov., 1871.

Note on the occurrence of Anisotoma scita, Er., in Great Britain.—I have in my collection an *Anisotoma*, ♀, taken in flood-refuse near York by Mr. Hutchinson, which

I refer with some slight reserve to the *A. scita* of Erichson (Ins. Deutschl., iii, 70); Dr. Sharp also informs me that he has several Scotch specimens apparently belonging to that species, and one of which, a male, kindly given some time ago to me by him, answers to its description satisfactorily in its chief characters.

A. scita has the anterior tibiæ but slightly widened towards the apex, and is apparently most likely to be confused with small examples of *A. dubia*, in which, however, the anterior tibiæ are usually considerably dilated. This character, however, employed by Erichson as sectional, is untrustworthy at times, as in old examples the spining, &c., of the outer edge becomes abraded, and in species liable to great varieties of sexual development (as are many of this genus) individuals of the same species differ considerably in this respect. Apart from the tibial test, *A. scita* may be known from *dubia* of equal size by its thorax having its greatest width apparently at the base, instead of nearer the middle, and by the front margin having a much shallower emargination for the reception of the head.

The comparatively larger apical joint of its antennæ, the straight hinder margin of its thorax, the rounded apex of its posterior femora beneath in both sexes, and its less oblong form, at once distinguish it from *A. calcarata*, to which Erichson, though noting these wide points of divergence, chiefly likens it.

Its less perfectly oval form and the much stronger punctures of the striæ of its elytra distinguish it from *A. ovalis*. Erichson states the punctuation of its thorax to be more delicate than in *ovalis*, though his diagnosis of the latter is "*præthorace crebre punctulato*," and of *scita* "*crebre punctato*." I fail to see this character in my insects.—E. C. RYE, 10, Lower Park Field, Putney, S.W., Nov. 1871.

Note on a species of Apion new to the British lists.—During the past month, Mr. Champion and I, in a day's collecting at Mickleham, each captured, by promiscuous sweeping, an example of an *Apion*, which I think must be referred to the *A. annulipes* of Wencker (Monogr. des Apionides, p. 37; L'Abeille, I, p. 145). These examples, both ♀, are closely allied to *flavimanum*, Gyll., from the ♀ of which they differ in their entirely black and very much stouter legs and wider tarsi, brilliant and very finely punctulated rostrum, rather shorter prothorax, of which the punctuation is not so close, and the less dull interstices of their elytra. One of these specimens is rather larger than my largest *flavimanum*; the other of the average size of that species.

The ♂ is described as having the antennæ testaceous, except the club, all the tibiæ marked with testaceous before the base and on the inner side, and the femora (especially the anterior) very robust.—Id.

Note on an unrecorded British species of Ceuthorhynchus.—M. Charles Brisout de Barneville, in his paper on "*Ceuthorhynchus nouveaux*," 'L'Abeille,' Vol v (published in 1869), at p. 437 describes a new species, from England only, under the name *Crotchii*, which appears hitherto to have escaped record in this country, although *C. frontalis* and *C. Dawsoni* (*pygmaeus*, Guyon, M.S.), described at p. 438 of the same work, have found a place in our lists,—before, indeed, their descriptions were published. *C. Chevrolatii*, also in our list, and in some foreign catalogues, and referred to the same author, does not appear to me to have been described at all as yet.

C. Crotchii is described as very like *versicolor*, Ch. Bris. (*quercicola*, Wat. Cat.), but differing from that species in its more depressed prothorax, of which the anterior margin is less reflexed, and in its testaceous tarsi, with smaller claws.—ID.

Note on Monotoma 4-dentata, Thoms.—Thomson, Opusc. Ent., p. 333, in describing this supposed new species, compares it only with *M. picipes*, which he states it to resemble very much in size and build, but to differ from it in its head being shorter before the antennæ, its obsolete frontal foveolæ, its rather shorter prothorax, of which the basal foveolæ are more shallow, but the lateral denticles near the base are more prominent, and its narrower and more strongly transversely rugulose elytra, of which the sides are scarcely dilated.

These differential characters are so precisely those of *M. brevicollis*, Aubé, that I can scarcely avoid concluding Thomson's insect to be identical with that species.—ID.

Addition to the description of Thyamis agilis, Rye.—Since the publication of the description of this species in Ent. M. Mag., V, p. 133 (Nov. 1868), no further examples of it have come under my notice until the end of May in the present year, when about six specimens were taken by the Rev. H. S. Gorham and Dr. Power at Bearsted, near Maidstone, off *Scrophularia aquatica*. Two others also were soon afterwards taken by the former of those gentlemen, near Staple, Kent, by promiscuous sweeping. These latter agree with my insect as described, but all the Maidstone specimens materially vary therefrom in coloration, and render an addition to my description necessary. Instead of being lurid testaceous with the under-side, head, and apex of antennæ and of posterior femora pitchy, as were all the examples formerly known to me, these (or, at least, the most fully marked of them) are entirely black beneath, with the head, scutellum and hind femora (except at the base internally) black, and with the suture of the elytra narrowly edged with black for its basal sixth, then broadly so until the apical sixth, where the black almost entirely vanishes. There is also in some of them an indeterminate pitchy patch on the lateral margin near the point where the posterior femora touch the sides. The posterior tibiæ are distinctly, and the 5 apical joints of the antennæ more or less, pitchy. The spurs of the posterior tibiæ in all the above mentioned specimens are exceedingly small and short, broad at the base, and scarcely perceptibly curved at the apex.

The coloration above described naturally causes a reference to *T. lateralis*, Ill.; but that species (which could hardly have failed to be familiar in all its phases to Herr Kutschera, who returned *T. agilis* as unknown to him) seems confined to *Verbascum*, the spurs of its posterior tibiæ are described as large and arched, its elytra have a very projecting humeral callus, with their punctuation disposed in striae on the upper half, its thorax is black in the fully coloured individuals, and red in the others, &c.

T. suturata, Foudr., found on *Verbascum thapsus* in the south of Europe, has shorter spurs than *T. lateralis*, but they are still arched; the punctuation of its thorax is almost imperceptible, and of its elytra very fine and disposed in almost straight lines in the upper half, &c.—ID.

Capture of Atomaria fimetarii at York.—Of this rare species (only hitherto taken in this country by single specimens, I believe, except by Mr Pelerin, in the north

of London) I was so fortunate as to capture about 30 examples, feeding on fungi, in company with *Rhizophagus parallellocollis*, in York Cemetery, during the past month of September.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Road, York, Nov. 1871.

Note on red Quedius "fulgidus."—I have lately taken upwards of 20 specimens of a "red *fulgidus*" (probably *puncticollis*, Thoms.), from decaying grass in a cow-house here, in company with hundreds of *Haploglossa prætexta*, and some dozens of *Heterothops prævius*. As the red forms of so-called *fulgidus* are, when taken, generally single specimens, it is rather interesting to find more than a score in one place. It may be well to mention that there were with them very few of the common dark form (*temporalis*, Thoms.); and that the manner of running, &c., of the individuals with red elytra was decidedly different from the slow turn of the head of the darker specimens before taking their departure from the collecting paper.—EDWARD A. WATERHOUSE, Fountains' Hall, Ripon, Oct., 1871.

Note on the genus Cydnus.—In the October number of this magazine I made some remarks on the application of the generic named *Cydnus*, and expressed my opinion that it should be retained for that portion of the Fabrician genus that Mr. Dallas has denominated *Æthus*. Mr. Douglas has since kindly pointed out to me Mr. Dallas' remarks on this subject in the 'Zoological Record' for 1869, in which he shows that Fabricius specially exhibits *tristis* as the type of his genus *Cydnus*. This of course leaves no ground for dispute, except on the "communis error" principle, which I trust few will be willing to adopt. I must therefore apologize for offering a judgment on a question that I had not fully studied.—EDWARD SAUNDERS, Hillfield, Reigate, 9th November, 1871.

Note on Calopteryx Vesta (virgo, race?)—The form of *Calopteryx* with bright reddish-brown wings, mentioned under the name of *Vesta* in Mr. Doubleday's 'List of Epping Odonata' (ante p. 86), occurs here rather commonly, always in woods, so far as my experience extends, and without any specimens of the typical *virgo*. The latter I have met with but seldom, and invariably near streams.

I have hitherto only met with *one-third* of the British dragon-flies in this neighbourhood, a poor produce compared with the *two-thirds* from Epping.—J. E. FLETCHER, Pitmaston-road, St. John's, Worcester, 17th Oct., 1871.

Psocids injurious to Tea.—A matter has recently been brought to my notice that promises to be of considerable commercial importance. It appears that a certain quantity of Indian tea from Assam and Darjeeling has been found to be terribly infested with small insects, not, so far as I understand, actually among the tea, but collected in the angles of the leaden inner casing of the boxes. A sample of the Assam tea shown to me was full of the insects, with much whitish 'frass,' which I am not satisfied was actual tea débris. The insect is the too familiar *Atropos divinatoria* (*pulsatoria*) of our insect-boxes and setting boards. Possibly there is no house, warehouse, or ship in the world, absolutely free from this (to us) little pest; but its occurrence in such myriads in these tea-boxes, is, to say the least, extraordinary. As I believe the matter involves possible litigation, it is not advisable than any expression of opinion as to their origin be made here.—R. McLACHLAN, Lewisham, 4th November, 1871.

*Discovery of the ♂ of *Pezomachus trux*, Först.*—Mr. J. E. Fletcher, of Worcester, sent me in 1869 several of the ♀ of *Pezomachus trux*, Först. a large and conspicuous red and black species, not very common. With them was a ♂ winged specimen, without abdomen, and therefore indeterminable. They were bred from *Coleophora vibicella*, and there seemed every reason to believe that the ♂ and ♀ of a *Pezomachus* were here brought together. Remembering the late Mr. Walton's device for ascertaining the sexes of *Apion*, I suggested to Mr. Fletcher that, in any future experiment, if the animals were kept alive, and watched, their natural instincts would lead them to exhibit proofs of their sexual relation. Mr. Fletcher accordingly repeated the attempt in 1870, by collecting some 500 larvæ of the *Coleophora*. The result was not encouraging, as only three of the ♀ *Pezomachus* were obtained. I now quote Mr. Fletcher's letter:—"The last summer I have had "somewhat better success: from 700 larvæ of the moth I obtained 8 ♂ and 8 ♀ "of the *Pezomachus*. I placed the sexes together, that I might get them to pair "(as you suggested); but I believe copulation did not take place. I watched them "frequently for several days, and the most I discovered was that on two or three "occasions a ♂ mounted on a ♀ apparently for coition, but the ♀ appeared "unwilling each time." Although the positive proof of the *flagrans delictum* is wanting, yet the circumstantial evidence is too strong to admit of doubt as to the specific identity of the two forms; viz., their mutual resemblance (except as to sexual differences); their uniform appearance in company, bred from the same larvæ; and the fact that of the *Pezomachus* the ♂ has always been unknown, and of the *Hemiteles*, the ♀,—for the ♂ in question is undoubtedly the insect to which Mr. Desvignes assigned the name *Hemiteles tenuicornis*, Gr. It belongs to a small group of ♂ forms whose ♀ is unknown; and it may be conjectured that the other sex of these, as in the present instance, is to be sought in *Pezomachus*. *H. luteiventris*, Gr., is also one of these. They are more slender than the typical males of *Hemiteles*, and have the metathorax as in *Pezomachus*. Many of the males of *Pezomachus* are wholly apterous, as is well known; but the genus can only be regarded as provisional, being founded on one sex. The presence or absence of wings appears to be only a secondary character. In a former volume of this Magazine I mentioned some instances of this; to which may be added that last year I found in Corsica a specimen of *Agrothereutes abbreviator*, F., ♀, with the wings fully developed, whereby the insect is converted into a *Cryptus*.—T. A. MARSHALL, St. Albans, Oct. 31, 1871.

*Capture of a *Pempelia* new to Britain.*—It was rough weather in the New Forest on the 29th July last, and, as I had never collected in the Isle of Wight, I thought I would have a run over. When I got there, I found the weather just as bad; but still, as it was my first visit, I felt obliged to look about me. It rained, however, so hard, that I was forced to take shelter; and, whilst doing so, I suddenly caught sight of, and captured, an insect which proved on inspection to be one of the *Phycidæ*—something I had never seen before—and which, it struck me, must be, at any rate, new to Britain.

An hour's hard work produced fourteen more, but it was then time to hurry off to catch the boat. So much for an hour on the Island.

I have placed a specimen in Dr. Knaggs' hands for determination—W. E. DAVIS, Haggerston Entomological Society, Dalston, 15th November, 1871.

*Occurrence of a Pempelia new to Britain (P. albariella, Zeller).—*A pair of this striking *Pempelia* were yesterday shown to me by Mr. W. E. Davis, who informed me that he has during the past season secured fifteen examples of it in the Isle of Wight. He kindly entrusted one to my care for determination. With the assistance of my friend Mr. Stainton, I find that Mr. Davis' insect is referable to the species above named, described by Prof. Zeller in the 'Isis' (1846, p. 785). Perhaps the following description, which I have drawn up from an examination of Mr. Davis' specimen, may assist our readers.

Pempelia albariella. General facies that of *P. palumbella*. *Antennæ* of the male setaceous, with a dilatation near their bases, on the upper side of which is arranged a cluster of blackish scales. *Palpi* with ascending curve, grey at their bases, blackish towards their tips, grey again at the tips. *Thorax* fuscous-greyish, the patagia having, towards their anterior portions, a few black scales. *Abdomen* fuscous-greyish, paler at the basal segments.

Fore-wings fuscous-greyish, whitish along the inner margin, especially towards the base of the wing; before the first line is a patch, somewhat circular in shape, composed of a cluster of raised black scales; first line blackish, bordered internally with ochreous-brown, angulated, starting obliquely from the junction of the basal and middle thirds of the costa: in the space between the first and second lines are three whitish streaks, the lower two being interrupted in the middle by the ground colour so as to form four short, whitish dashes: the upper extends along the discal cell, becoming slightly dilated at the disc, where a small black dot, composed of raised scales, is conspicuous; above this dot, and about midway between it and the costa, is another minute dot: the second line is blackish, irregularly sinuous, and bordered with ochreous-brown towards the apical margin (it is nearer the hind margin than in *P. palumbella*, and not so sharply angulated); towards the apex is a whitish patch, and there are some others, very small, below it along the apical margin, which terminates with a thin, interrupted, blackish line; cilia greyish-fuscous.

Hind-wings shining, fuscous-grey, margined by a double dusky line; cilia ochreous-grey.

Female similar, but without the "knot-horn."

P. albariella is placed by Dr. Standinger between *palumbella* and *obductella*. It is more nearly allied to the former, and is a very local and scarce insect abroad, its only recorded habitats being Hungary and "Amasia and Tokat" (in the north-east of Asia Minor).—H. GUARD KNAGGS, Kentish Town, Nov. 16th, 1871.

Natural History of Gymnancycla canella.—On the 16th of September, 1869, I was on the seashore during a gale of wind, and chancing to look at a shoot of *Salsola Kali*, which still protruded an inch or two above the rapidly accumulating sand, I saw a small larva blown off from it; this I immediately picked up, but my attempts to look for another were at that time entirely frustrated by the blinding sand-drift.

However, my solitary captive was contented to feed up on the little piece of *Salsola* which I brought home with it, and in a few days became a pupa; the perfect insect appeared in July, 1870, and was named for me by Mr. H. Doubleday with his usual kindness; and as he at the same time told me that the species was

not as yet common in British collections, I thought that some account of its larval state might not be unacceptable, and for this purpose have now put together the results of my investigations carried on during the present year.

The egg state I have not yet observed, and will not obtrude any guess as to *when* or *where* it is laid; the young larva, when less than one quarter of its full growth, mines within the stem of *Salsola Kali*, generally in the side shoots; but when it has reached half growth, it seems to change its abode, and to go outside and attack the unripe seeds, and then setting out from the cavity thus made, to burrow into the main stem, where it continues to feed in concealment until nearly fully grown: during this period of its existence its presence may be detected in the following manner: it protects the entrance hole of its burrow with a few exceedingly fine silk threads, and should a rainy day be succeeded by a high wind, these threads will retain many particles of sand blown over them whilst yet damp, and will thus become much more conspicuous than when in their more usual condition.

When the larva is near its full growth, it ceases to mine, and coming outside weaves for itself a delicate cylindrical web, in which it lies, often, however, changing its position, and sometimes trusting for protection only to its resemblance in colour to the stem on which it lies stretched out; when once in its web, it is not easily dislodged, and if driven out, still hangs on by a short thread, and soon returns again if not further disturbed. When full grown it enters the sand, and there constructs a cocoon of the surrounding particles, sometimes attaching it to a stone.

The youngest example of the larva, that I found, was less than a quarter of an inch long; of a pale semi-transparent glaucous green colour, with a black head and plate behind it. With growth the colour changes to an opaque ochreous-green, or to an olive-green, sometimes to a reddish-grey, the black head and plate continuing as long as the larva mines within the plant.

The full grown larva is five-eighths of an inch in length, slender, tapering from the back of the second segment to the head, which is partly retracted within it; the second segment is quite as long as any of the others; the body tapers also a little gradually from the tenth to the anal tip; on the thoracic segments there are deeply defined wrinkles, but on the others there are only one deep subdividing wrinkle, and another very slight one near the segmental division; all the legs small, and well under the body, which is cylindrical though just a trifle flattened on the back and belly. In colour the head is pale brownish-ochreous, marked on each lobe more or less with blackish-brown, the plate on the second segment is shining, and often faintly edged at the side with a slight streak of blackish, and is generally rather more inclining to ochreous, but is otherwise similar to the rest of the body in markings; the ground colour is generally of a glaucous green tint, deeper on the back and sides, and paler on the belly and legs; the dorsal line is a deep pink, or dark green, very faintly edged with a fine line of paler green than the ground colour; the sub-dorsal line is distinctly paler whitish-green, the line just above the spiracles is similar, and the space between them is a broad stripe of glaucous-green, darker than the ground; just beneath the sub-dorsal line, on the third and twelfth segments, is an ocellated spot of pale flesh-colour encircled with black; the minute spiracles are of the ground colour delicately outlined with brown; the tubercular dots are brown, but are scarcely visible without the help of a lens, nor are the fine

longish hairs which grow from them, and which seem to be more numerous at each end of the body. Varieties occur, in which the whole of the back has a slight pinkish tinge; others are darker, and of a reddish-grey colour; but when mature, all assume rather a pale ochreous-green tint.

The cocoon when free in the sand is half-an-inch in length, ovate in shape, dumpy, irregularly rounded at one end and a little pointed at the other; it is composed of grains of sand spun together, and is smoothly lined inside with silk; when the cocoon is attached to a stone, it is about five-eighths of an inch or a little more in length, but the ends rounded and of uniform size tapered off close to the surface of the stone. The pupa is about three-eighths of an inch in length, rather slender and smooth, but with no peculiarity of form, save that the tip of the abdomen is rounded off, and the wing cases rather long; it is of a pale greenish-ochreous tint, the wing-covers green, and the whole surface rather shining.—WM. BUCKLER, Emsworth, September 18th, 1871.

Natural history of Phibalapteryx lapidata.—In October, 1870, I received through Mr. Buckler, some eggs of this species, which had been obtained by Mr. S. R. Fetherstonhaugh from a moth captured by him in Ireland. Not knowing when to expect the larvæ, I kept a portion of the eggs in a pill-box, and put the rest out doors on some moss. The former soon changed colour, but shrivelled up without producing anything; the latter remained without change till the beginning of May, 1871, when the larvæ appeared in the course of the first week. At first, I could not tell what food to give them, but, luckily, before I had lost all, I thought of trying *Clematis*, and on this I succeeded in getting three of them to feed. Of this trio, one died almost immediately, another fed on till the end of June, and died, whilst the third about the same time became a pupa. The moth, however, died without emerging, although it was so far developed that the markings of the wings could be plainly distinguished on removing the pupa-case.

I am able therefore to offer some descriptions of the earlier stages, but the question as to the proper food plant remains to be settled; the moths seem to affect coarse grass and rushes, and *Galium verum* I understand grows abundantly where they have been taken by Mr. Fetherstonhaugh.

The egg is of a long oval outline, one end blunter than the other, flattened, and with a depression on the upper surface; the shell covered all over with very faint pentagonal net work; colour yellow, changing just at last to olive. The young larva is smooth, slender, tapering, pale ochreous, with brownish dorsal and sub-dorsal lines. After it begins to feed the central part of the body becomes greenish; but after a moult or two, and as soon as it really begins to grow, the ground colour becomes pale greenish-grey (much like that of immature *Ph. tersata*), except on the last segments, which, with the belly, are more ochreous, the dorsal line still brownish, two fine lines on the side, and a stouter one just above the spiracles.

When full grown the length is rather over seven-eighths of an inch, the figure cylindrical, no longer to be called slender, but moderately stout, and nearly uniform throughout, except the head and second segment, which taper a little, as does also the 13th; the skin smooth. The ground colour of back and sides pale whitish-yellow, the back slightly glaucous, the sides more white; the thin dorsal line

formed of greyish freckles; the sub-dorsal rather higher up than usual, formed also of greyish freckles, darkest near the head, and growing paler towards the 13th, and bearing both the dorsal tubercular dots; below on the side comes a fine greyish line, and just below that again a broader and darker stripe with still darker freckles; the spiracular region and belly are pale buff; the spiracles and all the usual dots are black; through the belly run a central, and three pairs of side lines, all composed of greyish freckles; the head grey, freckled with a darker tint of the same.

The whole appearance of the full grown larva much resembles that of an *Eubolia*.

The pupa was placed just under the surface of the fine soil, with no cocoon, but just a few threads; about one-third of an inch in length, cylindrical, and rather blunt at the ends; polished, at first of a delicate, almost golden, brown, afterwards more reddish-brown.

As Mr. Fetherstonhaugh has been fortunate enough to secure eggs again this autumn, and has kindly sent me some more, I hope to be able to verify all these observations, and probably add to them, next season.—J. HELLINS, Exeter, 14th November, 1871.

Note on Phibalapteryx lignata.—Having had a further supply of the eggs of the second brood of moths, I think I have satisfied myself that the larvæ from them do not feed up before hybernation, at least when kept outdoors, exposed to the weather.—Id.

Note on the identity of Argynnis Adippe and A. Niobe.—I have mentioned in several places that, when in Switzerland, I frequently saw the males of *A. Adippe* and *A. Niobe* in pursuit of each other's partners, but I never was fortunate enough to take them in coitû; this summer Mr. Druce was more lucky than I, for he caught a pair of *Argynnis* in this condition, and on examining them found that they were referable to these two so-called species.—A. G. BUTLER, British Museum, 3rd Nov., 1871.

Occurrence of Deilephila euphorbiæ near Southampton.—On the 24th August I took a fine specimen of *Deilephila euphorbiæ* at rest in a private garden near Southampton.—WALTER P. WESTON, 1, Duncan Terrace, Islington, October, 1871.

Pieris Daphidice at Dover.—It may interest the readers of the "Entomologist's Monthly Magazine" to know that when at Dover, at the close of August, I had the pleasure of seeing a specimen of *Pieris Daphidice* in possession of a lad named Lewis Henry Neall, son of J. S. Neall, Esq., of Croydon, who informed me that he captured it on August 25th, at St. Margaret's, as it was resting on a thistle blossom. It was a male and in good condition.—WM. FARREN WHITE, Stonehouse Vicarage, Gloucestershire, October 21th, 1871.

Capture of Heliothis armigera and other Lepidoptera at Sidmouth.—The following list of *Lepidoptera* captured during the latter half of August and the first half of September, may be of some interest to your readers.—*Argynnis Aglaia* and *Paphia*, *Thecla quercûs* (one specimen), *T. betulæ*, *Hesperia Actæon* (seven specimens), *Colias Edusa* (common), *Lithosia complanula*, *Acidalia promutata*, *Larentia olivata*, *Hypsipetes impluviata*, *Bryophila glandifera*, *Heliothis armigera* (three very fine specimens), *Eudorea angustea*, &c., &c.—RICHARD COWPER, 3, The Residences, South Kensington Museum, 27th October, 1871.

Captures of Heliothis armigera, Sphinx convolvuli, Acherontia Atropos, &c., at Westward Ho!—In September, my brother and I took seven specimens of *S. convolvuli*, in splendid condition, at *Petunia*, in our garden; also a specimen of *H. armigera* at geranium. Two larvæ of *A. Atropos* have been brought to us, and on *Galium verum* we found 16 larvæ of *Chærocampa porcellus*.—C. H. GOSSET, The Priory, Westward Ho!, November, 1871.

The nomenclature of Rhopalocera, as affected by the names given in Perry's 'Arcana.'—Several Butterflies are named and figured in this work, and some of these directly affect synonymy. I herewith append a List of those cases:—

<i>Papilio Demosthenes</i> ,	Perry (published August, 1810)	=	<i>Caligo Inachis</i> .
" <i>Phalæna</i> ,	" (" October, 1810)	=	<i>Heliconius Phyllis</i> .
" <i>cæruleus</i> ,	" (" Dec., 1811)	=	<i>Morpho Anaxibia</i> , var. (Brazilian type).
" <i>Catenarius</i> ,	" (" Mar. 1st, 1811)	=	<i>Morpho Epistrophis</i> .
" <i>volcanica</i> ,	" (" Sept. 1st, 1811)	=	<i>Callidryas Larra</i> , ♀.

—A. G. BUTLER, British Museum, 24th October, 1871.

Luminosity of Fulgora (extract from Perry's 'Arcana').—I have found the following interesting remarks in Perry's 'Arcana,' an old and rare book, kindly lent to me by Mr. Janson, and I think they are worth reprinting, as additional evidence in favour of the luminosity of the Lantern flies. "*The Fulgora candelaria*. A "native of China, the trunk of a yellow colour, turned upwards at the end, and "rounded; the upper wings green, streaked with beautiful veins of yellow; the "under wings of yellow, edged with black. There is an agreeable contrast in the "shades and tints of this beautiful insect; but it is impossible to conceive what "the effect of its light must be, except in its native country, as it loses its phos- "phoric effect when dried. Travellers who have visited China may be supposed to "have exaggerated its effects, when they inform us that the Indians perform their "journeys by night, carrying one of them fastened to the foot, and one in each hand, "by this means making all other light unnecessary. This insect undoubtedly has "light sufficient for its own purposes, the acquirement of its proper food, or the "pursuit of its favourite mate; but of its uses to man we can find no such opinion, "as Monsieur Lesser has figured forth in his 'Théologie des Insectes,' who would "persuade us that the natives use no other light in their houses than this small "phosphoric animal." The species is figured by Perry.—*Id.*

[It appears to us that Perry's notice affords no additional evidence whatever, it being merely a re-iteration of 'Travellers' Tales.' If *Fulgora* be luminous, then it must studiously turn off its 'bull's eye' in the presence of all the modern travelling scientific naturalists who have made special search for its lamp; and, having arrived at this stage of development, we anticipate that, by a process of 'natural selection,' it will eventually lose all luminous power and attributes, having found that there is no truth in the celebrated motto '*ex luce lucellum*.'—*EDS.*]

Review:

THE MICROGRAPHIC DICTIONARY, by J. W. GRIFFITH, M.D., and ARTHUR HENFREY, F.R.S., &c.; third edition edited by J. W. GRIFFITH, the Rev. J. M. BERKELEY, and T. RUPERT JONES. London, John Van Voorst.

We have before us Parts 1 and 2 of the new edition of this standard work. To the entomologist, who must constantly make the microscope subservient to his investigations, it will prove of great value, more especially the instructions in manipulation conveyed in the introductory portion. To the microscopist *pur et simple*, an individual towards whom we confess to a deficiency in our bump of veneration, it is indispensable. The work is illustrated by many, partly coloured, plates, and by innumerable woodcuts, and the "getting up" is creditable alike to editors, printers, and publisher.

ENTOMOLOGICAL SOCIETY OF LONDON, 6th November, 1871.--Prof. J. O. WESTWOOD, M.A., F.L.S., Vice-President, in the Chair.

Mr. Davis exhibited a collection of beautifully preserved larvæ of *Lepidoptera* and other insects, some of these illustrating almost a complete natural history of the species.

Mr. Bond exhibited two examples of *Zygæna exulans* from Braemar, received from Dr. Buchanan White; a *Catocala fraxini* captured in the Regent's Park on the 12th September; and a singular variety of *Charocampa Elpenor* from Ipswich, having the central portion of each fore-wing completely hyaline.

Mr. Janson (for the Rev. A. Matthews) exhibited two recently detected species of British *Coleoptera*, viz., *Throscus carinifrons* (see Ent. Mo. Mag., viii, p. 135), and *Cryphalus piceæ*.

Mr. McLachlan exhibited *Bittacus apterus*, recently described and figured in this Magazine.

Mr. H. Vaughan exhibited the dark form of *Triphæna orbona* captured at Forres by Mr. Norman, and described as *T. Curtisi* by Newman. Mr. W. A. Lewis pointed out the synonymy of this form, it having been confounded with *T. consequa* and *T. subsequa* by Curtis and Stephens respectively. Mr. Vaughan also exhibited a nearly black variety of *Arge Galathea* captured by Mr. Farn.

Mr. Müller exhibited the impregnated and unimpregnated eggs of *Libellula flaveola* referred to in the November number of this Magazine; also a gigantic oak-gall, from N. America, given to him by Mr. Riley.

Professor Westwood exhibited numerous specimens of an ant not hitherto recorded as British, the true *Formica herculeana* of Linné. These had been found in the proventriculus of an example of the great black woodpecker, *Picus martius*, said to have been shot in Wytham Wood near Oxford. From the fresh state of both bird and ants, and from the fact that these latter had not passed into the gizzard, he was inclined to fully believe the statement of the British origin of the bird, especially as this had been sold at a price indicating that the vendor, a labouring man, had no knowledge of its value. Mr. Jenner Weir, and other Members, utterly disbelieved the supposed British origin of the woodpecker in question. Prof. Westwood also exhibited two male examples of *Papilio Crino* from Ceylon, one of which presented a character in the hairy clothing of some of the viens, which, though usual in many species, was not considered an attribute of this.

Mr. F. Smith exhibited a *Noctua*, apparently of the genus *Aplecta*, captured by Mr. Gwyn Jeffreys on the Atlantic, 220 miles from Nova Scotia, and on the outward voyage. (Since identified with *Aplecta occulta*.)

Baron Chaudoir communicated notes on *Eurygnathus parallelus*, combating Mr. Wollaston's recently expressed opinion that it was only a form of *E. Latreillei*.

Mr. Briggs read a paper "On the forms of *Zygæna trifolii*, with some remarks on the question of specific differences as opposed to local or phytophagic variation in that genus."

DESCRIPTION OF A BRITISH SPECIES OF *SCOPARIA* NEW TO SCIENCE.

BY F. BUCHANAN WHITE, M.D.

SCOPARIA SCOTICA, n. sp.

Alis anticis pallide cinereis, sub-triquetris, apicibus sub-acutis, marginibus apicalibus obliquis; strigis obscurioribus, primis interne, secundis externe, albido-marginatis; strigis primis sub-rectis, secundis angulatis et denticulatis; stigmatibus obscurioribus, orbiculari et claviformi strigam primam attingentibus, reniformi literam X simulante, fusco vel luteo-fusco repleto; marginibus apicalibus leviter punctatis; ciliis albidis lined cinerea dissectis. Alis posterioribus exalbidis, sub-hyalinis, ad limbum sub-fuscis; ciliis ut in alis anterioribus.

Exp. alar. maris, 10"—11".

Habitat: Perthshire.

Closely allied to *Scoparia cembræ*, from which it differs in the front wings being less oblong and more triangular and dilated before the hind margin, as well as by the breadth across the hind margin being greater in proportion to the length of the wing.

The apex is more acute than in that species, and the hind margin is oblique. The colour of the front wings is grey, not brownish, and the lines and stigmata are more distinctly marked than is usually the case in *S. cembræ*. The lines are slender and blackish, margined, the first towards the base, the second towards the hind margin, with whitish. The open orbicular, and the dash-like claviform stigmata, are attached to the first line, and the reniform stigma is X-shaped, and filled in with fuscous or yellowish-fuscous. The second line is finely serrated and bi-arcuate, the first arch close to the costa, and about one-fifth the size of the second arch, which occupies the rest of the line. The apical area is rather paler than the rest of the wings, and the hind margin has a series of grey spots. The cilia are whitish, intersected by a grey line parallel to the hind margin. The hind-wings are silky-white, clouded with pale grey along the hind margin; the cilia as in the front wing.

I have seen several specimens, taken in the vicinity of Perth by Messrs. T. Marshall and W. Herd.

Dr. Knaggs, to whom I submitted a specimen, kindly informs me that, in his opinion, this *Scoparia* is "certainly new."

Perth: December, 1871.

NOTES ON THE EARLIER STAGES OF SOME SPECIES OF *LITHOSIDÆ*.

BY W. BUCKLER AND THE REV. J. HELLINS, M.A.

By the help of several friends, we are again enabled to put forth a few words under this heading; being indebted to Mr. F. Merrifield

for the information which led to the capture of *Setina irrorella*; to Mr. Barrett for eggs of *Lithosia muscerda*; to Mr. Birks for eggs of *Nudaria senex*; to Dr. White for larvæ of *Nudaria mundana*; and to Mr. Harwood for larvæ of *Lithosia mesomella* and *Lithosia complana*.

NUDARIA SENEX. Eggs received on July 18th, 1870; larvæ hatched on 21st; fed on decayed sawallow and bramble leaves, on the young growth of *Hypnum sericeum* and *Weissia cirrata*, and on *Lichen caninus*; hibernated; moulted for last time early in May, 1871; full-fed about beginning of June; the moth out June 23rd. Mr. Birks describes the locality in which the moths were captured by him, as a swamp very rich in plants; and he found them either hovering over tufts of low herbage and coarse grass, or resting on the blades and stems of the grass or reeds; he could see no lichens except on the trunks of the trees growing there, and he never noticed the moths haunting these, as we might suppose they sometimes would, if they deposited their eggs on them; possibly the food may be some lichen growing under the herbage on the damp ground. The female, while laying her eggs, mixes with them fluff from a tuft at her tail, which she detaches by means of her two hinder feet; and the way in which the fine plumes from this tuft adhere to the eggs makes it rather hard to describe them.

The larvæ, when hatched, were placed in a flower pot with growing moss and lichen, and straightway hid themselves, and nothing more was seen of them till the solitary survivor of the whole brood was detected feeding early in May; probably the rest were destroyed, while yet tender, by the small slugs and snails that infest lichens, and cannot be got rid of except by picking the latter to pieces; small centipedes also hide themselves away craftily, and no doubt do mischief.

The egg is small, globular in shape, but so soft that the outline is not at all regular, the shell shining, covered with faint irregular reticulations, yellowish in colour. The young larva is pale grey, with central olive stripe down the back, and with five or six long pale grey hairs from each tubercle. Just before the last moult, the whole larva has a waxen, dull, smoky appearance; the tubercles raised, and studded with tufts formed of short, smoky hairs, mixed with a few feathered plumes. When full-grown, the length is three-eighths of an inch, the figure very stout in proportion; the tufts so dense that the skin cannot be well seen, except when the larva curls itself up, and then it is seen at the segmental divisions—waxen-looking, and of a deep reddish-grey colour; the head shining black, the anterior legs glossy, tipped with black, the ventral legs translucent, in colour pale grey; the tuft-bearing

tubercles are six in number on each segment; the tufts on the second segment are composed of single dark brown hairs, but the other tufts are much denser, and formed of two sorts of hairs, the more numerous being pale brown stiff hairs, with sharp black points, and being sparsely barbed or feathered, the others, fewer in number, are taller, with black stems, and densely feathered all round with soft pale brown plumage.

The cocoon was of an oval form, about four lines in length, formed of close spun silk, and attached to the cover of the box in which the larva was confined; the hairs of the coat were all woven in, giving the cocoon a brown colour, and rough texture. The pupa skin, examined after the exit of the moth, was about one quarter of an inch in length, highly polished, of a rich deep brown colour, the segmental divisions showing as pale reddish rings.

NUDARIA MUNDANA. The full-grown larva received on 31st May, 1869, having been captured feeding on lichens on an old stone wall.

Its length three-eighths of an inch, its figure rather stout in proportion, uniform in bulk throughout; the legs all well developed; six raised tubercles on each segment bearing long straggling fine hairs; the ground colour of the back bright sulphur-yellow; the dorsal stripe dark greyish-brown; a blackish dorsal spot on the eighth segment; the sub-dorsal line blackish-brown, the whole body below this, including the legs, of a semi-translucent pale greyish-brown, all the tubercles and hairs rather dark greyish-brown, the head dark brown.

SETINA IRRORELLA. On July 30th, 1865, some eggs were received from Dr. Knaggs, and noted as globular, pearly in texture, clear purplish-brown in colour; the larvæ hatched August 13th, but no note of them was taken, and they must soon have perished from want of proper food and treatment. However, there is no doubt that in their habitat they must hibernate when small, and feed up in early summer.

On May 24th, 1867, after considerable search, a number were found, then approaching full growth, on the Sussex coast. The food is a blackish-brown lichen, growing on stones above high water mark, and in some cases mixed with a yellow lichen, a fact of much interest when the colouring of the larva is considered. The larva seems fond of sunshine, moving about in it slowly over the stones; when about to moult, it protects itself by spinning overhead a number of silken threads, under cover of which it remains until the moult is completed.

The moths were bred early in July.

When the larva is full-grown, its length is about six-eighths of an inch, the figure proportionate, moderately stout, tapering a little from

the fourth segment to the head, and again at the thirteenth; six raised tubercles on each segment studded with longish hairs: the ground colour blackish-brown above, and dark reddish-grey, or purplish-grey, on the sides; belly and legs reddish; the dorsal stripe takes the form of a series of deep, brilliant yellow, acorn-shaped marks, the acorns pointing backwards, and so placed that the segmental folds mark the separation between the cup and the fruit; the paler and duller yellow sub-dorsal line much interrupted; the spiracular stripe of bright yellow also much interrupted; the raised tubercles blackish; the hairs blackish-brown; the ground on the back, and the lower part of the sides, minutely freckled with yellow; the inconspicuous spiracles dirty-white, ringed with black.

The short, stoutish pupa, placed in a cocoon of thin webby silk, spun amongst the stones and *débris*.

LITHOSIA MESOMELLA. It was recorded at p. 111 of E. M. M., vol. v, that this species had been reared to about half-growth, and its appearance at that stage described: we can now speak of the full-grown larva.

On May 5th and 25th, 1871, specimens were received, which had been found on the trunks of oak trees, feeding on a pale lichen growing intermixed with moss, but not sufficiently developed in its growth to enable us to make sure of its name. These larvæ soon spun up, and the moths, extremely fine examples, were bred on June 9th and 18th.

The full-grown larva is nearly an inch long, figure moderately stout, and tapering only at the head and second, and at the thirteenth segment; on each segment behind the second are eight raised tubercles densely tufted: the colour of the body is deep velvety, slaty-blackish; the head shining black; a deep velvety, black patch on the second segment; the anterior legs shining black, the ventral legs pellucid, pale greyish, tipped with black; the second segment bears only simple black hairs, and similar hairs are found along the sides of the other segments just above the legs; but the tufts on their upper parts are composed of black hairs so densely feathered, that they catch the light, and receive quite a greyish effect from their peculiar softness, and almost entirely hide the skin beneath. In this peculiar featheriness of the larval clothing, this species comes so close to *Calligenia miniata*, that it might well stand in the same genus with it; and it seems no improvement on the arrangement of Doubleday's List, in which they do actually stand close together, though in different genera, to separate them, as Staudinger has done, by the insertion of *irrorella*, and others, between them.

The pale brown stout pupa is enclosed in a comparatively large cocoon, formed of semi-transparent, thin, greyish silk web, spun in any convenient hollow under the moss or lichen.

LITHOSIA MUSCERDA. Eggs received July 30th, 1870; larvæ hatched August 3rd; received the same treatment and food as that given above for *N. senex*; hybernated small, when about one-fifth of an inch long; three were seen alive and feeding in February, 1871; moulted at the end of March; two were then accidentally lost; the survivor moulted for the last time on May 6th; full-fed about the end of that month; spun a cocoon, but had not strength to become a pupa. Probably the right food is some sort of lichen growing on the sallow bushes in the soaking wet parts of the fens, where the moth occurs: Mr. Barrett finds that it affects these bushes far more than any other kind of growth in the fens, and he observes that it is on the wing from early dusk till darkness sets in, when it disappears until midnight, after which hour it has another short flight; and probably there is a third flight in the morning dusk.

The egg was noted as small and shining. The young larva is of a dirty-whitish colour, with black head, the tubercles furnished with single, stiff, dark hairs. When the larva is about one-fifth of an inch long, the tubercles are shining black, and furnished with tufts of short hairs, the head shining black, the general colour of the body and hairs dull black, dorsal line and segmental folds velvety-black, a pair of dull orange spots on the second segment. This appearance continued up to the last moult; after that had taken place, for an hour or two the colouring was very striking; the head was shining white, and while the tufts on the first segment, and down the centre of the back were darkish brown, all the others were bright, light, reddish-brown; but this gay dress soon sobered down again.

The length of the full-grown larva is about three-quarters of an inch, the figure rather stout, cylindrical, tapering only at the second segment and head, and again at the thirteenth; the legs well developed; eight tubercles on each segment raised and tufted, the front dorsal pair being only moderately large, but the hind pair much enlarged, and transversely oval in shape; on segments three and four the front pair are larger than the hinder pair; all these tubercles thickly set with very short hairs. The general colouring is rusty-black; the ground colour of the body being velvety blackish-brown, marbled with reddish-grey, the dorsal stripe and sub-dorsal line deep velvety-black; on each side of the dorsal on the second segment, and again on the front of the

thirteenth, is a squarish, dull, deep, red spot; head shining black; tubercles and hairs all deep brown; each front pair of tubercles set in reddish-grey rings; there is a fine, reddish-grey, interrupted, sub-spiracular line; the belly pinkish-grey, all the legs shining, dark, reddish-grey, tips of prolegs pellucid.

The larva retired into a curled-up bramble leaf, and there formed a thin, webby cocoon of greyish silk, outside which was a finer and thinner web of white silk.

LITHOSIA COMPLANA. The larva of this species has long been known, and descriptions of it have been published by many Entomologists; our object, therefore, in introducing any remarks upon it in this paper, is not so much to describe it over again, as to say something about it with reference to the larva of *molybdeola*.

At page 109 of E. M. M., vol. v, was published an account of two larvæ of *molybdeola* reared from the egg in 1867-68, very careful figures of which were also taken, with the view of using them for comparison when the larva of *complanata* could be procured. And in this way we have used them both this last summer, and the summer before, and have noted the following particulars.

In several points there exists between the larvæ of *complanata* and *molybdeola* the similarity which is also shown by their imagos: *complanata* is rather the larger of the two, but there is in both the same figure, the same arrangement of tubercles, the same sort of hairs in the tufts; in their colouring there is the same ground of dead blackish-grey, the brown tubercles and hairs, the velvety-black dorsal and lateral stripes, and the sub-dorsal row of parti-coloured orange-red and white spots. Now, in the descriptions of *complanata*, we find these spots called *oval*; "taches ovales,"* Guenée calls them; "taches arrondies ou un peu ovalaires,"† says Boisduval; and, as far as we can gather from our friends who are accustomed to take the larva of *complanata* in this country, they do not know of any other shape for these spots but *oval* or *roundish*; in the two larvæ of *molybdeola* mentioned above, these sub-dorsal spots had no roundness whatever in their shape, but were *narrowish*, *oblong*, *somewhat wedge-shaped* marks. Boisduval, in his account of *complanata*, goes on to say, "Elle varie un peu pour la couleur et pour la forme des taches orangées; quelque fois celles-ci sont blanches sur tous leurs bords avec le centre orangé; d'autres fois il n'y a que la partie postérieure de chaque qui soit orangée. Souvent elles sont alongées

* Annales de la Société Entomologique de France. 1861. Premier trimestre.

† "Collection Iconographique et Historique des Chenilles."

ou un peu triangulaires, et semblent presque former, lorsque la chenille est en repos, deux raies non interrompues :” so that we must either give up the shape of these sub-dorsal spots as a point of difference, or else suppose that Boisduval had seen larvæ of *molybdeola* as well as of *complana*. In coming lower down the side, below the black lateral stripe, which comes next to the sub-dorsal spots, we reach another point: and here Boisduval fails us, for he says nothing of the side of *complana*, only that “les stigmates sont peu apparents,” and “le dessous du corps est grisâtre,” and then he gives the colour of the legs. Guenée is much more precise, “la région laterale est plus pâle” (than the ground colour), “avec des linéaments noirs, marqués, à la place de la stigmatale, de traits fauves, isolés, tres fins ;” and other descriptions also speak of a reddish-yellow line running just above the feet. Now, the *description* of *molybdeola* before referred to does not help us much here, for it omits some particulars, the importance of which was not then seen; but the *figures* show most distinctly that, while in *complana* the spiracular region is occupied by one broader rust-coloured line, in *molybdeola* there is first a *fine line of pale grey*, then a line of the ground colour, and then a *narrower line of the rust colour*; and, unless the inspection of a larger number of larvæ of *molybdeola* can prove that this arrangement of lines is not permanent, we have in it a good distinctive character; and perhaps any one, who could place the living larvæ of both species side by side for comparison, would, on a careful examination, find others equally good.

9th December, 1871.

DESCRIPTION OF A NEW AFRICAN BUTTERFLY.

BY THOMAS CHAPMAN.

CRENIS BENGUELE, n. sp.

♂. *Upper-side*: both wings pinkish-lavender. Fore-wing: apex black, narrowing down the hind margin, and continued slightly up the nervules; a row of five marginal black spots near the apex, and a larger black spot near the anal angle. Hind-wing: outer margin edged with black; a marginal band of oval black spots, and more inwardly a row of five black dots; fringes white.

Under-side: fore-wing: base orange, rest light bluish-green; central portion blotched with purple and black, outer margins edged with black; a marginal row of eight black spots, with an inner row of three, near the costa. Hind-wing: light blue-green, outer margin edged with

black; following the curve of this margin in order towards the base, an interrupted black line, a narrow band of orange, a line of seven black spots, a second band of orange, a band of eight irregular black dashes, a third band of orange, three black dashes, base orange.

Expanse, $2\frac{1}{16}$ inches.

Habitat: South West Africa.

Glasgow: November 18th, 1871.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 11).

BY H. W. BATES, F.L.S.

Genus ADRIMUS (Dej. Cat.), *nov. gen.*

*Corpus oblongum, vix convexum; minus robustum. Caput ob-
ovatum, oculis magnis, modice prominulis, collo gradatim angustato. Antennæ dimidium corporis vix superantes, ab articulo quarto dense
pubescentes. Mentum medio simpliciter dentatum. Palpi graciles, articulis duobus terminalibus æquales, ultimo cylindrico-truncato. Thorax
elytris angustior, postice recte truncatus, ad basin utrinque late foveatus, fovearum fundis striolâ impressis. Elytra apice sinuata, fortiter striata, iridescentia, interstitio 3^{io} unipunctato; striolâ scutellari nullâ. Meta-
sternum quam latitudo anterior vix longius, postice modice angustatum; epimera brevissima, lata, postice recte truncata. Mesosternum intra
coxas concavum, canaliculatum. Pedes graciles, setulis rigidis instructi; tibiarum anticarum apices haud dilatatæ. Maris tarsorum anticorum
articuli tres basales paullo dilatati, haud obliqui, angulis fortiter rotun-
datis, plantis biserialim squamosis.*

This is another genus allied to *Loxandrus*, *Metoncidus* and *Stolonis*. In form, some of them, having a narrow sub-cordate thorax, resemble *Anchomeni*; but others, with the thorax not narrowed behind, are exceedingly like the smaller *Loxandri*. The dilatation of the ♂ fore tarsi resembles that of the *Anchomeni*, the first joint being elongate-triangular and the second and third ovate, not *transverse cordate* as in the *Feroniæ*; the fourth is small and triangular. A very good generic distinction is presented by the metasternal epimera, which are very short and broad, with straight hind margins, quite unlike the same organs in the *Loxandri*, which are as long as broad, with regularly rounded hind margins, similar in fact to the epimera of *Pæcilus*. This character is the only one which distinguishes the females of *Adrimus* from those of *Loxandrus*.

ADRIMUS MICRODERUS, n. sp.

Gracilis, niger, nitidus, iridescens, capite lævi; thorace capite paulo

latri, sub-cordato, angulis anticis fortiter deflexis, collo adhærentibus, lateribus antice fortiter rotundatis, postice longe (haud sinuatim) angustato, angulis posticis rectis, basi grosse parce punctato, foveâ utrinque latâ impresso; elytris fortiter striatis, striarum fundis eleganter punctulatis, interstitiis (ac præcipue lateralibus) convexis; corpore subtilus sericeo-nitente; palpis coxisque rufo-piceis. Long. 4 lin. ♂.

Ega; under decaying logs in moist places.

ADRIUM RUFANGULUS, n. sp.

Elongato-ovatus, piceo-niger, sericeo-nitidus, iridescens, antennis basi, palpis pedibusque (tibiis postice fuscis exceptis) rufo-testaceis; thorace latiori, transverso, antice paulo rotundato, postice haud angustato, basi grosse parce punctato, foveis latis, ad fundum oblique sulculatis, marginibus posticis rufo-testaceis; elytris haud profunde punctulato-striatis; abdomine piceo. Long. 4½ lin. ♀.

Ega.

ADRIUM VIRIDESCENS.

Loxandrus id. Bates; *ante*, p. 132.

On re-examining the whole of my *Loxandri*, I find that this species has the peculiar transverse-linear form of the metasternal epimera characteristic of *Adrium*; and, on looking more carefully at the ♂ fore tarsi, I observe that they are not oblique. The species is therefore an *Adrium*. It is distinguished from *A. rufangulus* (which it resembles in the rufous margins of the thorax) by its smaller size (3—3½ lin.), and by its thorax being distinctly but slightly narrowed behind and much less punctured at the base.

A common insect in the Amazons region.

ADRIUM GEMINATUS, n. sp.

A. viridescenti simillimus; differt tantum elytrorum interstitiis 4^{to} et 6^{to} latis, planis, striisque 2^{nda}—3^{ia} et 4^{ta}—5^{ta} (præcipue postice) approximatis, 4^{ta} et 5^{ta} ante apicem interruptis. Long. 3½ lin. ♀.

The resemblance between the single specimen of this insect and the preceding species (of which I have half-a-dozen examples) is perfect in every respect except the disposition of the elytral striæ; so that I am in doubt whether it is not an aberration, although no parallel case is known to me among the *Carabidæ*. In all the *Adrimi* the striæ are at equal intervals and deeply impressed, except the middle striæ on the disc, which are a little fainter.

Ega.

ADRIUMUS CREPERUS, n. sp.

A. viridescenti quoque proxime affinis; differt tantum colore minus piceo, magis æneo, elytrorum suturâ marginibusque vix rufescentibus, thorace postice vix angustato, versus angulos posticos haud explanato, angustissime pallido marginato.

Long. $3\frac{1}{2}$ lin. ♂.

Pará.

Genus DIPLOHARPUS.

Chaudoir, Bull. Moscou, 1852, ii, p. 394.

A remarkable genus of *Anchomeninæ*, peculiar to Tropical America, and distinguished by the long narrow mandibles and other parts of the mouth,—the long exserted maxillæ projecting even beyond the mandibles. The pubescence of the antennæ commences at the third or even the second joint, but it is not dense on these joints, and it is doubtful if the fine pubescence proper can be said to commence before the 4th.

DIPLOHARPUS EBENINUS, n. sp.

D. lævissimo (Chaud.) *proxime affinis, at minor, gracilior, elytrorum striâ 2^{nda} profundius impressâ; nigerrimus, elytris leviter iridescentibus, oris partibus, antennis, trochanteribus, tibiis intus tarsisque rufo-testaceis: capite thoraceque ut in D. lævissimo impunctatis; elytris convexis, postice gradatim dilatatis, prope apicem abrupte angustatis, suprâ lævissimis, striis duabus punctatis prope suturam distinctis, ad basin oblitteratis, prima solum apicem attingenti; femoribus extus piceis: abdomine rufescenti.*

Long. $4\frac{1}{2}$ lin. Lat. elytr. $1\frac{1}{2}$ lin. ♂.

The dimensions given by Baron Chaudoir for his South Brazilian species, *D. lævissimus*, are, "Long. 5 lin., lat. elytr. 2 lin.," which agree with my specimen. *D. ebeninus* is smaller and more slender; the ♂ differing from ♂ *lævissimus* in the elytra being narrower at the base and dilated towards the apex.

Pebas, Upper Amazons.

DIPLOHARPUS RUBRIPES, n. sp.

D. lævissimo similis, at multo minor, nec non gracilior, elytris ovato-cordatis, baseos medio paulo emarginato, humeris distinctioribus; niger, nitidus, oris partibus, antennis, pedibusque rufis; abdomine elytrorumque margine deflexo piceo-rufis; corpore suprâ lævissimo, elytris striis duabus punctatis, suturali solum distinctâ, impressis.

Long. $3\frac{1}{2}$ lin. Lat. elytr. $1\frac{1}{2}$ lin. ♂.

Ega.

DIPLOHARPUS STRIOLATUS, n. sp.

Minor, niger, politus, oris partibus, antennis, pedibusque rufis, abdo-

mine apice rufescenti; thorace transverso, antice mullo minus quam in precedentibus rotundato, posticeque minus angustato, angulis omnibus magis prominulis; elytris striâ suturali solùm haud punctatâ impressis, ad apicem striâ brevi acute impressâ, ab suturâ oblique ductâ:—antennis brevibus; palpis apice angustatis.

Long. $2\frac{1}{2}$ lin. *Lat. elytr.* $1\frac{1}{2}$ lin. ♂ ♀.

Distinguished not only by its smaller size and transverse quadrate thorax, but by the very distinct and sharply scored short stria at the apex of the elytra, separated from the strongly marked sub-marginal stria by a narrow ridge. All the preceding species have an irregular impression in the same position; but the impression becomes a very definite stria or sulcus in the present one.

Ega.

DIPLOHARPUS SEXSTRIATUS, n. sp.

Minimus, piceo-niger, politus, oris partibus, antennis, pedibusque clarè fulvo-testaceis; thorace magno, lato, lateribus late rotundatis, postice paulo angustato, angulis posticis obtusis, haud prominulis; elytris utrinque prope suturam striis latis tribus punctatis distincte impressis, nec basin nec apicem attingentibus, exterioribus valde abbreviatis, ad apicem haud striolatis, striâ sub-marginali flexuosâ; antennis brevibus, articulis apicem versus crassis; palpis apice acuminatis. *Long.* $1\frac{1}{2}$ lin. ♀.

In the gradually pointed palpi and sub-moniliform antennæ this species seems to connect the genus *Diploharpus* with *Trechicus*.

Ega.

Kentish Town: December, 1871.

Note on Cryptophagus grandis.—Having been enabled, through the courtesy of Messrs. E. W. Janson and G. B. Crotch, to examine the insects (taken by the former gentleman in the north of London) in their collections representing this species, and upon which it was introduced as British, I can come to no other conclusion than that these specimens are merely pallid individuals of *C. populi*, and that *C. grandis*, Ktz., must be expunged from our lists. Dr. Sharp, who has subsequently examined Mr Crotch's exponents, is also of my opinion. Moreover, from the description (and especially the avoidance in it of any mention of *populi*, which is not included in the Insect. Deutschl., and to which only this insect could apparently be likened with reason), I think it very probable that Kraatz's *grandis* is itself only pale *populi*, Payk.—E. C. RYE, 10, Lower Park Fields, Putney, S.W., December, 1871.

Note on Cryptophagus Waterhousei, Rye.—I feel, reluctantly, obliged to withdraw this insect as a good species, as I have come to the conclusion, in spite of several minor discrepancies, that it is a monstrosity of *C. acutangulus*, Gyll. Thomson's record of supposed *acutangulus*, with a similar equilateral thoracic

development, did not shake (on the contrary, rather strengthened) my belief in it as a species; but I have recently seen a British specimen belonging to Dr. Sharp, one side of the thorax of which is that of normal *acutangulus*, and the other more than intermediate between that species and *Waterhousei*. Abandoned as a species, I presume the British origin of the individual will not again be questioned.—ID.

Note on the habits of Dorcatoma bovista, Ent. H.—In September last, my friend Mr. Linton and I found the larvæ of this species in small dry specimens of *Bovista plumbea* and other small fungi, on a sandy flat near Barmouth.

In less than a week, several perfect specimens of the *Dorcatoma* made their appearance; others have since continued to do so very sparingly, and, as the fungi still contain larvæ, other specimens may come out next spring. Sometimes the larva eats its way out of the fungus, and at once changes into the pupa state, from which it becomes the perfect insect in about ten days; but usually it forms a cocoon of spores, changing to the pupa state inside the fungus, out of which the perfect insect eats its way.

We found the *Bovista* in all stages of growth, from the size of a pea to the old dry specimens in which were the larvæ; but there were no traces of larvæ in any of the fresh fungi, although it seems most probable that eggs had been laid and hatched in some of them; probably the larvæ were too small to be easily discovered.

I was directed to the place where we found the fungi by Mr. J. Kidson Taylor, whose original capture of the *Dorcatoma* at Barmouth has been recorded in this Magazine. The species appears to be very local, as fungi picked up in other places in the neighbourhood contained no trace of the insect.—J. SIDEBOTHAM, 19, George Street, Manchester, 11th November, 1871.

Note on Nemosoma elongata.—Having, some years ago, met with a few dead examples of this species in an old rail near Beeston, Notts., I determined, as I was staying for a few days in the same neighbourhood during this week, to find the insect in a living state, if possible. An examination of a few elm rails in the meadows near the Trent soon produced a few specimens, along with their constant companion, *Hylesinus vittatus*.

On naming the matter to my friend Mr. E. J. Lowe of Highfields, I asking him where it was probable I should meet with more elm rails, he suggested that I should examine the wood yard behind his garden. We accordingly did so, and I soon found a considerable number of specimens, leaving many logs and rails untouched.—ID.

On Pesomachus trux, Först., and *P. fasciatus*, Fab., ♂.—At p. 162 of this vol., I stated that the male insects sent by Mr. Fletcher were *Hemiteles tenuicornis*, Gr., according to Mr. Desvignes. Three specimens named by Mr. Desvignes have always stood unquestioned in my collection under that name; and they are certainly identical with Mr. Fletcher's specimens. But examination of them by the descriptions of Gravenhorst and Taschenberg, shews that they cannot be *H. tenuicornis*; of which the ♂ ♀ are both known, winged, and with the metathorax areated. I regret to have been led into error by accepting this name without examination. The result of a careful search into the nomenclature of these insects may be thus briefly expressed :—*Pesomachus trux*, Först., ♀, = *hortensis*, Gr.,

var. 5, ♀, = *Hemiteles palpator*, Gr., ♂, and var. 4, ♂ (excl. ♀ and other varr.), = *H. palpator*, Tasch., ♂. The ♂ of another species is now known to me, through the kindness of Mr. F. Smith, who has lent me a number of *Pezomachi*. The ♂ in question is the one referred to in Tr. Ent. Soc., ser. 2, 1859, vol. v, p. 209; and was reared with *Pezomachus fasciatus*, F., from the eggs of *Agelena brunnea*. The synonymy in this case is as follows: *Pezomachus fasciatus*, Fab., Gr., ♀, = *Hemiteles luteiventris*, Gr., ♂, = *Hemimachus fasciatus*, Ratz., ♂ ♀. Both species belong to *Hemimachus*, Ratz., a genus to be retained at present as convenient; and their respective names, without an *alias*, should, I presume, be *Hemimachus trua*, Först., and *Hemimachus fasciatus*, Fab. The trivial names *hortensis*, Gr., and *palpator*, Gr., have the priority indeed, but must be thrown aside as including a jumble of species.—T. A. MARSHALL, St. Albans, December 15th, 1871.

On dipterous pupæ found in gall-like nidi on the fronds of Athyrium filix-femina.—Among many other novel and welcome contributions from across the border, I am indebted for the subject of the following note to the kindness of that indefatigable naturalist, Mr. George Norman.

In the middle of July last, this gentleman transmitted to me a series of very curious foliaceous green balls, ranging from the size of a hazel-nut up to that of a walnut, each one consisting of a crumpled up and distorted frond of *Athyrium filix-femina*. A memorandum accompanied the specimens, stating that they had been found at "Relugas, Morayshire."

My first involuntary impression, for which I feel sure Mr. Norman will readily grant me absolution, was, that my well-known penchant for the study of such objects had led to the perpetration of a mild joke, as the balls looked as if they had been rolled up by human hands.

But closer examination very soon convinced me that my esteemed correspondent had again been one of those lucky observers, of whom we read:

"Nature showing whom she will
Where her inner secrets lurk."

On unrolling one of the balls, I found that the main rib of the frond had been contracted in such a manner as to act like a rough sort of spring, of the more or less spiral contortions of which the ball was made up. The loose centre of the ball consisted of the crumpled up anterior part of the frond, in a semi-decayed, and brown, moist condition. Within this central nidus, a larva seems to have lived; and, as evinced by the peculiar state of the surroundings, seems to have partaken of the sap of the plant for sustenance, after the manner of the *Cecidomyiæ*, *Trypetidæ*, and other *Diptera*. But this larva I do not know; on the other hand, an examination of several specimens of this leafy nidus has produced four dipterous pupæ, one from each nidus; and, although I carefully searched all the specimens, no trace of any other insect, dead or alive, turned up. The following is a description of one of these objects:

Dipterous Puparium: Coarctate, rigid, coriaceous, shining chestnut-brown, extremities darker, elliptic, elongated, tapering to both extremities, but less so to one than to the other; upper-side slightly arched, under-side somewhat flattened; stouter extremity viewed from above distinctly produced into a narrower, short, truncated, and somewhat flattened cone; the two extreme distant points of the cone drawn out into an extremely short truncate joint; thinner

extremity viewed from beneath, rounded off into a crown of short protuberances, of which two thick and short ones are close together and centrally situated, while each side is flanked by two delicate distant teeth; viewed from above, the thinner extremity shows only the two central protuberances plainly. Segments of the puparium, and a row of lateral stigmata on each side, visible to the naked eye.

Length, $5\frac{1}{2}$ millimètres.

Greatest width, 2 millimètres.

By this description it will be seen, that these puparia belong to one of the *Muscidae*; but I think it hardly safe to speculate as to their nearer relationship. I have placed the four healthy specimens in my possession under different "régimes," but, as the wintering of such pupæ is a ticklish matter, I think it advisable to publish this note now; then, happen what may, the next observer who comes across their home, "that wee bit heap o' leaves," will know it; and will perhaps complete Mr. Norman's interesting discovery, by rearing the fly.—ALBERT MÜLLER, South Norwood, S.E., November 11th, 1871.

Occurrence near Derby of a Noctua new to Britain: Agrotis helvetina, Bdv.—On the 16th of November last, I received from Mr. George W. Taylor, of Derby, a strange looking *Noctua*, quite unlike any recorded British species. Mr Taylor informed me that in July, 1870, he had captured this specimen (a ♀) as it was flying along a hedge, and that about the same time his cousin had secured two more examples of the unknown. He had since vainly endeavoured to get the insect named; and at last, in despair, I suppose, forwarded it to me. Unfortunately, the only specimen of *helvetina* to which I had access for purposes of comparison was a male, and this differed from Mr. Taylor's insect both in the fore-wings and length of the antennæ; so that after taking a description of it I at once returned it, with a request that a male might be forwarded, in the event of either of his cousin's captures proving to be of that sex. One of these, a male, was most obligingly sent to me, and settled the question by showing that his antennæ were not too long, and that the apices of his fore-wings were of the requisite acuteness—in short, left no doubt whatever in my mind as to the proper place of the species in nature.

Agrotis helvetina is quite an inch and three quarters in expanse. The fore-wing is of a unicolorous reddish-ochreous drab, approaching pale dull fawn colour, with a peculiar silky or satiny texture and lustre, which at once arrests the attention, particularly by gas light; the reniform stigma is faintly indicated and tinted, at the side towards the apical margin, with leaden colour; and except that, when examined at certain angles, the elbowed line is faintly discernible, there are no other markings. The hind-wings are silky fuscous-whitish, with a barely discernible lunule. The cilia of all the wings ochreous-drab. Antennæ long and setaceous. Thorax and abdomen of the same colour as the fore-wings, the anal segments being slightly more ochreous.

Under-surface of fore-wings fuscous, tinged with fawn colour, and shining, more fawn coloured along the costa; beyond the middle are three faint costal marks, and another near the apex; the wings are margined with darker fuscous, and the cilia are paler. Hind-wings shining whitish-fuscous, fawn coloured towards the costa, with a dusky lunule faintly marked; at a little distance from, and parallel with, the hind-margin is a dusky transverse shade. Cilia as in fore-wing.

Legs fawn coloured, under-surface of thorax woolly in appearance, and of a pale ochreous colour. Tongue reddish-brown, split up for half its length into six, in the specimen before me. Eyes dull black.

Female similar, but broader in the fore-wings, which are also more vertical at the apical margin; the antennæ are longer and the tip of the palpi more naked.

The great character of *helvetina* would seem to be the absence of any character; but the peculiar silky lustre is very striking.

Helvetina is a rare species abroad. It has occurred in Germany, France, Switzerland, Piedmont.

The larva is unknown.—H. GUARD KNAGGS, Kentish Town, December 1st, 1871.

Note on Argynnis Niobe and A. Adippe.—I am rather surprised that Mr. Butler should suppose that the capture of *Argynnis Niobe* and *A. Adippe* in *coitū* is a proof of their being varieties of one species. I have seen *Smerinthus populi* and *Sphinx ligustri* in the same situation; and I think no one will deny that these are specifically distinct.

Although I rather doubt the possibility of distinguishing *Niobe* and *Adippe* on the wing, yet if they do chase each other it proves nothing. Every collector must have frequently seen males of *Gonepteryx rhamni* chasing females of *Pieris brassicae*, and males of this species chasing female *rhamni*. I have often seen males of *A. cardamines* chasing specimens of *Pieris napi*.

I believe *Niobe* and *Adippe* are as distinct as any two species of the genus *Argynnis*. Dr. Staudinger, who is certainly rather too much inclined to sink real species to the rank of varieties, gives them as distinct without any mark of doubt in the new edition of his valuable catalogue of European *Lepidoptera*.

The female *Niobe* is very different, both in colour and form, from the same sex of *Adippe*, and closely resembles the female *Aglais* on the upper surface; the variations of the two species are also very different.—HENRY DOUBLEDAY, Epping, December 13th, 1871.

Description of the larva of Ephya punctaria.—On the 28th of August last, I received from the Rev. E. N. Bloomfield, of Guestling, near Hastings, a few eggs of this species. They hatched in a few days, and the young larvæ were pale greyish-green, rather broadly transversely barred with brown. At the end of September they were full-fed, and may be described as follows.

Length about an inch, and of moderate thickness in proportion. Head very slightly wider than the second, but not wider than the third, segment (until full-fed it is considerably wider than the second); it is very finely notched on the crown, the cheeks are globular, and the face flat. Body cylindrical and of nearly uniform width throughout, the second segment being the narrowest, and the twelfth slightly the widest.

In my brood were two distinct varieties, the more numerous of which I will describe as Var. 1. Ground colour pinkish-brown; head chocolate-brown, variegated with grey. A narrow, but distinct pale grey line, edged on each side with a smoky-black line of equal width, forms the medio-dorsal line; an exceedingly fine and almost imperceptible waved grey thread forms the sub-dorsal lines; and there is a similar line above the spiracles. On each side, and on each segment, commencing on the spiracular region, is a dark smoky mark, extending obliquely upwards

and uniting at the divisions on the anterior of each segment: each of these smoky marks is edged anteriorly with lemon-yellow. Usual dots minute, black. Ventral surface grey, with pink longitudinal lines. Some specimens have a much yellower appearance than others, with the oblique marks perfectly black, but edged with yellow in the same way.

Var. 2. Ground colour bright emerald-green; the head as in var. 1; a narrow white line, edged with smoke colour on the posterior segments forms the medio-dorsal line; sub-dorsal and spiracular lines scarcely perceptible. The oblique marks are brownish-red, surrounded with yellow, not so large as in var. 1, and, unlike them, do not meet on the dorsal surface; on the anal segment is a chocolate-brown wedge-shaped mark, edged anteriorly with pale yellow. Ventral surface uniformly green, thickly powdered with whitish.

Feeds on oak, and rests in a very peculiar position, the food being grasped by the claspers, and the whole remaining portion of the body turned sideways against the food plant, which gives it a very ludicrous appearance. There are two equally distinct varieties of the pupa; those from the brown variety being grey, and those from the green larvæ, green. The first larva changed to a pupa on October 6th, and a moth appeared November 3rd.—Geo. T. PORRITT, Huddersfield, November 10th, 1871.

Captures of Lepidoptera near Sheerness, during the past season.—Despite the abominable weather which has been the characteristic of the past season, I cannot, on the whole, complain of my success, insects being abundant enough whenever wind and temperature were such as to admit of their stirring abroad. The following are my best captures in this bare, exposed, and woodless locality:—

Heptalus Sylvinus; common, at rest and flying at dusk. *Porthesia chrysorrhæa*; larvæ in immense abundance, defoliating the white-thorn hedges (to which they were by no means confined) for hundreds of yards, and apparently not at all affected by the Spitzbergen-weather of May and June; last year this species occurred in nearly equal abundance, although previous to 1868 it was quite a rarity in this district. *Spilosoma papyratia*; one specimen at rest on a furze-bush. *Amphidasis prodromaria*; a few males at gas-lamps in the spring. *Acidalia trigeminata*; not uncommonly beaten from hedges. *A. rusticata*; a solitary example, at rest on a coal-shed in the outskirts of the town. *A. promutata*; abundant, at rest on the "sea-wall" between Sheerness and Queenborough, and elsewhere. *A. emutaria*; not very rare, flying at dusk in damp places, from June to August; also at rest among herbage by day. *A. emarginata*; common in hedges. *Aspilates citraria*; common, in waste places near the shore. *Macaria notata*; one example, beaten from a thorn-hedge near Queenborough. *Eupithecia subumbrata*; common on flowery banks. *E. frasinata*; two specimens at rest on an out-house. *E. nanata*; one at rest on a fence, at the end of August; as far as I am aware there is no heather within many miles of this locality. *E. subnotata*; abundant among *Chenopodium*, also at rest on fences, &c. *E. castigata* and *pumilata*; rather sparingly beaten from hedges. *Anticlea rubidata*; one specimen flying at dusk. *Coremia quadrifasciaria*; one, beaten out of thatch. *Campptogramma fluviata*; a ♂ example on a gas-lamp, unfortunately destroyed in the boxing. *Cidaria miata*; not rare at ivy-bloom. *Eubolia cervinata*; swarming among mallows after dark, in

October. *E. bipunctaria*; abundant on the cliffs, although their soil (indeed that of the whole island) is stiff clay, becoming only a little sandy in places. *Bryophila glandifera*; at rest on the dockyard wall, but much less common than in previous years. *Acronycta aceris*; common at rest, principally in the Dockyard. *Leucania straminea*; a wasted (but recognisable) specimen, at rest on a grass stem in a dry place. *Nonagria fulva*; rare, among reeds. *N. typhæ*; pupa very common in stems of *Typha latifolia* growing on the cliffs. *Heliophobus popularis*; not rare, on lighted windows in town. *Mamestra abjecta*; one example, disturbed from among *Atriplex*, near Queenborough (last year I took four or five specimens of this species, by beating thatch). *Mamestra anceps* and *Agrotis rorida*; rather commonly beaten from thatch, along with scores of *Triphæna orbona* and *pronuba*. *Caradrina cubicularis*, and other common *Noctuæ*. *Noctua Dahlii*; one poor specimen at sugar. *Tæniocampa gracilis*; at fallow-bloom, not common. *Orthosia lota*, *O. macilenta*, *Anchocelis rufo-pistacina*, *lunosa*, *Cerastis vaccinii*, *spadicea*, *Scopelosoma satellitia*, *Xanthia cerago*, *silago*, and *ferruginea*; all more or less plentiful at ivy-bloom, some being very abundant. *Eremobia ochroleuca*; common on flower heads of *Centaurea nigra*; also at sugar. *Hecatera dysodea*; rare, at rest and flying at dusk. *Epunda lutulenta*, one; *Calocampa exoleta*, two; *Xylina rhizolitha*, two; and *X. semibrunnea*, rather freely, at ivy-bloom. *Heliothis armigera*; one example, on ivy-bloom, in October. I may remark that I have met with this species here on two previous occasions; in 1868, one flying along and settling on a fence; and in 1869, I took two, alas! ruined specimens out of a ditch, into which they had fallen while feeding at the flowers of *Aster tripolium*, which grew on the bank in abundance. *Catocala nupta*; common, at sugar and rest. *Hypena rostralis*; in thatch and at ivy-bloom, very common. *Herminia tarsipennalis*; rather common, beaten from hedges, and flying at dusk. *Pyralis glaucinalis*; in great abundance in the thatch of an out-house, a score or more being sometimes dislodged at each blow of the beating-stick. *Aglossa cuprealis*; one specimen at rest. *Cledeobia angustalis*; locally abundant in waste places. *Acentropus niveus*; abundant on an unfinished canal cutting near Sheerness, the brackish water of which is choked with *Potamogeton pectinatus*. *Botys pandalis*, a straggler in the Dockyard. *Spilodes cinctalis*; not uncommon on the cliffs. *Homæosoma binævella*, sparingly, and *Myelois cribrum*, rather commonly on thistles. *Crambus cerussellus*; abundant in grassy waste places. *C. falsellus*; very plentiful in the thatch of some out-houses near Minster. *C. selasellus*; a few on lighted windows in the town. *Agdistes Bennetti*; rather sparingly among *Statice limonium*.

Of *Chisocampa castrensis*—usually abundant enough in the larva state on the sea-wall near Queenborough—I was able to find only a very few starved and stunted larvæ, with which I could do nothing at all. Its scarcity during the past season I am inclined to attribute to the cold north-east winds which prevailed during May and June, which, however, seemed not to affect in the least its despised and destructive congener, *neustria*.—JAMES J. WALKER, 7, West Street, Blue Town, Sheerness, November 14th, 1871.

Notes on an entomological visit to Braemar.—From about the 29th of July, I was for some weeks at Braemar, enjoying the hospitality of my kind friend Dr. Buchanan White, whose most agreeable company, with the charm of a new and excellent hunting ground, caused the time to pass very happily. Considering this

miserable summer, I was fairly fortunate in weather on the whole, but the time of year was much against good results, and something like a month to six weeks earlier would have proved far better; yet, with some allowance for these drawbacks, I was very contented with my spoils, of which I proceed to give a general digest.

The *Coleoptera* were all but over, and my few captures were better in quality than quantity, comprising one *Amara Quenseli*, with a few specimens of *Agabus Solieri* and *arcticus*.

Two or three *Cychrus rostratus* turned up, and *Otiorhynchus monticola* was plentiful under stones both in the valleys and on the mountain tops. A solitary *Cicindela campestris* glanced brightly in the sun, the last of a numerous company; and, on some *Potamogeton* in the peat pools, occurred a *Donacia* but sparsely. Far up one of the numerous glens which abound in that district, lay the mouldering remnants of a red-deer monarch of the wild, who, with a royal generosity, had devoted his earthly remains to the furtherance of science, and "rich and rare" were the Coleopterous results to the learned doctors who investigated the said relics, and even I came in for a heavy bag, the bulk of which consisted of several species of *Catops*, and here and there a *Sphærites glabratus* or *Corynetes violaceus*.

Pissodes pini occurred now and then on some new fir wood paling, and I got one example of *P. notatus*.

In *Lepidoptera*, which order I especially pursued, I was tolerably successful. *E. æthiops* (*Blandina*) occurred plentifully, but was very local, it was most abundant in Glen Lim; *C. Typhon*, var. *Laidion* and *C. Pamphilus*, accompanied it, and frequented other spots as well, the latter being very bright and large. *L. Icarus* was on the whole the commonest butterfly, flitting everywhere. I obtained some fine and very dark ♀ *A. Aglaia*, but all the males that I saw were of the usual colour. Several of the "profanum vulgus" of *Rhopalocera* were conspicuous by their total absence or rarity, the altitude of Braemar being apparently beyond their range. I did not come across any of the *Sphinges*, but certain of the *Bombyces* were taken, among them a large young brood of the larva of *S. pavonia* feeding on heather. I beat one larva of *N. dictæoides* with several of *L. camolina* off birch. On some of the trees of *Populus tremula*, which grow by the bridge over the Linn of Quoich, were found, spun between the leaves, the larvæ of *C. or*.

Amongst the *Noctuæ*, I may, *en passant*, observe that I found one cocoon of *A. myrica* on a rock, which, however, had the slight disadvantage of being empty. *H. monoglypha* (*polyodon*) came to sugar not rarely, and was much lighter than I should have expected, the dark aberration *infuscata* being unnoticed. On the ragwort bloom I secured some very fine *C. graminis*, larger and darker and brighter than any I had elsewhere taken. The puzzling *M. furva* appeared at sugar. Of *A. strigula* (*porphyrea*) I netted a wonderfully minute specimen. The extraordinary swarms of *N. baja* were noticeable; it, with *N. augur*, outdid any other visitors to our saccharine bait in the proportion of fully a thousand to one. *Festiva* and *confusa* ran into each other in various gradations and variety of marking. *O. suspecta*, with *A. tincta*, were perhaps the best of the takes at sugar; which, on the whole, was, from various causes, by no means richly attractive. The lovely genus *Plusia* was represented by one specimen of *chrysis* and several of *interrogationis*; the last we took best by searching the stones in the damp, broken and rough localities they frequent; while at rest on the stones they may be easily enough boxed, at least, if they are

dozing, but in sunshine a mere shadow will send them off into space with their darting flight. I took one larva of *B. parthenias*. *C. elingvaria*, to turn to the *Geometrae*, was not rare, and *H. wavaria* turned up. *F. brunneata* might be met with in the birch woods, but was local, and apparently not very abundant. *L. didymata* was a perfect pest, and, by wickedly assuming dubious shades of colour, led me some wild goose chases, for which I can hardly say I blessed it; *casitata* was almost equally abundant, though less ubiquitous: both *olivata* and *viridaria* (*pectinitaria*) occurred. *E. sobrinata* swarmed amongst the junipers, whence also the larvæ of *T. juniperata* might be beaten out. *M. bicolorata* (*rubiginata*) was excessively abundant among the alders fringing the banks of the Cluny, and I got some nicely marked specimens, with one of ab. *plumbata*. *C. immanata* presented a wonderful show of varieties, from very dark to almost white; and *populata* was equally common and variable, some of the specimens being almost unicolorous (ab. *musanaria*, F.). After one or two futile searches, we at last lighted on a locality for the beautiful *C. paludata* (*imbutata*), where it was not by any means rare. I met with but few *Pyrallites*, *S. alpinalis* being the best; and among the *Crambites* the only noticeable was *C. margaritellus*, which was abundant in the localities frequented by *Erebia athiops*. From these notes, it will be seen that nothing very wonderful crossed my path; but the captures made at an earlier portion of the summer will render Braemar famous as a northern Paradise for the brethren of the net, when the wonders are disclosed.

In passing the *Hymenoptera*, I would only observe that the colonies of *Formica rufa* possessed the largest cities I have seen in this country, and that if the weary entomologist ventured to rest himself near any wood, he was abruptly and sharply reminded that he was trespassing on the private property of these teeming multitudes; and further, I would recommend any fearless entomologist to try the flavour of fresh formic acid, which he may *perhaps* like.

I captured some of the *Neuroptera* which came my way, and failed to secure what must, from the place where it occurred, have almost certainly been, *Æschna borealis*. Who ever did net an *Æschna*, save by a "fluke?" Of the *Trichoptera*, for the names of which I am indebted to Mr. McLachlan, I obtained several species, but none of any great rarity.—W. DOUGLAS ROBINSON, Christ Church, Oxford, 19th October, 1871.

Occurrence of an extraordinary variety of Euperia fulvago near London.—I have to record the capture of a striking variety (a male) of the above species at sugar in Highgate Wood, on August 13th, 1870, by Mr. R. G. Burry and myself.

Contrary to the usual rule in such cases, this southern example is much darker than the typical form which occurs in its ordinary and more northern localities. I am informed that the specimen taken by Mr. Stainton at Lewisham, in 1846, approaches it, but is neither so fine, nor so deeply coloured.

The ground colour of the fore-wings is a warm buff, irrorated with minute fuscous atoms. A fuscous "central shade" which runs from the reniform stigma to the inner margin, is separated in the middle, and forms, with the costal spot which joins the reniform stigma, three very distinct, equidistant, fuscous shaded blotches. The orbicular and reniform stigmata are respectively light and dark orange. The hind-wings are whitish, with two rather indistinct fuscous bands towards the hind margin. Thorax and antennæ warm buff, body whitish.

Mr. Stainton's specimen and my own are, I believe, the only recorded south British examples of *E. fulvago*; and their great difference from the ordinary type proves that, at any rate, in this case, the southern form is the darker. It is singular that two only should have been taken in the south, and that both should have occurred near London.

We have sugared in the same locality both this year and last, but have failed to obtain another specimen.

Dr. Knaggs and several other well-known entomologists have seen the specimen, so that there can be no doubt as to the species. I have heard that there was a similar example in the collection of the late Mr. T. H. Allis, of York, now, I suppose, in the Museum of that city. It would be interesting to know, if possible, the locality in which this specimen was taken.—HENRY BARTLETT, 4, Brecknock Street, Camden Town, N.W., November, 1871.

Captures of Lepidoptera at Guestling in 1871.—Although the season has been unfavourable, I have taken several species which may be of sufficient interest to justify a short notice.

June 10th—I bred *Clostera curtula* from a larva taken the previous autumn. 13th—This was a warm evening, and I took at light single specimens of *Eurymene dolobraria*, *Hypsipetes impluviata*, *Notodonta camelina*, *N. ziczac*, *Neuria saponaria*, and *Hadena pisi*, about half a-dozen *Hadena genistæ*, together with many other common species. The following evening (14th), I took, also at light, *Notodonta dodonæa*, *Platypterys falcata*, and *Aplecta tinctoria*; and found *Acronycta leporina* on some palings. July 5th—*Cryptoblabes bistriga*: of this I took two specimens, both accidentally, when striking at larger insects; 14th—A good number of species came to light, but the only two worth mentioning were *Acronycta ligustri* and *Ephestia elutella*; 17th—Saw the first specimens of *Phycis roborella* and *Rhodophæa consociella*: the former was met with now and then, the latter quite commonly, but mostly worn; they came to light and were also taken by mothing. About this time, I took, by mothing, two specimens of *Meliphora alveariella* (*Achroia grisella*, Stainton's Manual), and on the 31st, *Acronycta auricoma*; I had not seen it here since 1868. August 12th—A favourable evening for light: I took single specimens of *Ennomos erosaria*, *Platypterys hamula*, and *Hadena suasa*; and on the 14th, I was visited by *Liparis monacha*, *Cerigo Cytherea*, and *Scoparia cembra*; 25th—I met with a single specimen of *Eupithecia expallidata* on a window, at the hall fan-light; and on September 12th, I was very much pleased to see in my garden, *Variea c-album*, feeding on the ripe and injured plums.—E. N. BLOOMFIELD, Guestling, November 18th, 1871.

Reviews:

SKANDINAVIENS NEUROPTERA, beskrifne af H. D. J. WALLENGREN. Första Afdelningen. Neuroptera-Planipennia. (In the "Kongl. Svenska Vetenskaps-Akademiens Handlingar," Band. 9, 1871).

It is with great satisfaction that we find ourselves in a position to notice a monographic work upon Swedish *Neuroptera*; a satisfaction intensified by the fact that it is the result of the labours of Pastor Wallengren, who, in the retirement of a Swedish village, devotes himself to the study of Entomology in the spirit of a true Naturalist. This first instalment comprises the *Planipennia*; and naturally

the Swedish fauna assimilates itself in a marked manner to that of the British Islands. Herr Wallengren describes 50 Swedish species, the precise number enumerated in the 'Catalogue of British Neuroptera' by Mr. McLachlan. And the individual specific discrepancies are likely to disappear, when the fauna of both countries shall become better known. Sweden, however, claims a *Myrmelæon*, which we scarcely dare to hope for as a British genus, though the species in question, no doubt the true Linnean *formicarius*, has a wide northern range, even up to 55° in Siberia; the species commonly accepted under this name being decidedly more southern in its habits. The work is printed entirely in the Swedish language, but the technical part of it, at any rate, can be overcome by the purchase of a grammar and dictionary, and, having these, by a little application. Some Swedish Naturalists have latterly printed their works in English; but, whilst acknowledging the boon, we are not quite sure whether they do not thereby render their labours less useful to their own countrymen,—for educational works, such as local faunistic monographs must ever be, are matters of paramount importance.

HYMENOPTERA SCANDINAVIÆ, auctore C. G. THOMSON; Tom. i (Tenthredo et Sirex, Lin.). Lundæ, 1871, 8vo., pp. 1-342.

We have here another contribution to entomological literature by one of the band of hard-working Swedish entomologists. Herr Thomson, so long known as a Coleopterist, has again turned his attention more exclusively to *Hymenoptera*, and purposes a monographic revision of the Swedish species, of which this (comprising the saw-flies) is the first part. The work is marked by so much originality, and in so high a degree revolutionizes pre-existing arrangements, both as to species and sequence, that we must be pardoned for not yet being able to express a decided opinion on many of its most striking features. Without doubt, however, the prominence given to structural characters, such as sculpture, &c., in the specific diagnoses, is a vast improvement upon older works. So is also the removal of the *Doleri* to close connection with the *Allanti* and allies, instead of retaining them in the neighbourhood of the *Emphyti*, &c., which they resemble only by the more artificial characters of alar cell-structure. Upon one point we confess to being dissatisfied. Herr Thomson has, in scarcely any one case, said even a word concerning the larvæ; and in this the works of Hartig, Zaddach, and Snellen Van Vollenhoven (who is not even mentioned), must still take precedence over his. The book is printed almost entirely in Latin; the few notes in the vernacular being chiefly of local interest.

ENTOMOLOGICAL SOCIETY OF LONDON, 20th November, 1871.—A. R. WALLACE, Esq., F.Z.S., President, in the chair.

The following gentlemen were balloted for and elected:—C. V. Riley, Esq., State Entomologist for Missouri, U.S., as Foreign Member; Lient. B. Lowsley, and F. Raine, Esq., as Ordinary Members; and W. H. Miskin, Esq., of Brisbane, as a Subscriber.

With reference to the occurrence of *Formica herculeana* in the crop of *Picus martius*, said to have been shot near Oxford (as stated at the last meeting by Professor Westwood), Mr. Dunning remarked that he had ascertained that examples of this bird, presumably of Norwegian origin, were exposed for sale in Leadenhall Market, at the same time as the specimen was said to have occurred at Oxford. Mr. E. Sheppard considered it very singular that the only supposed British examples of the Ant should be found in the crop of a bird reputed doubtfully British. Mr.

McLachlan suggested that the spot in which the bird was said to have been shot should be searched, in order to find the Ant if possible. Professor Westwood and Mr. F. Smith remarked on the evidence of the bird being British; and Mr. Bond said that all, or nearly all, the recorded instances had been found to be erroneous. Professor Westwood promised to furnish further evidence.

Mr. Bond exhibited a series of a peculiarly small and pale form of *Lasiocampa trifolii* bred for a number of consecutive years by Mr. Mitford from larvæ feeding on a species of grass on the shore at Romney Marsh; and he also stated that Mr. Mitford had bred *Lithosia caniola* from the same locality. He further exhibited malformations of *Clisiocampa castrensis*.

Mr. Stainton exhibited, on behalf of Mr. D'Orville, a variety of *Agrotis comes* (*Triphaena orbona* of our old lists), from the neighbourhood of Exeter.

Mr. McLachlan exhibited a remarkable instance of mimetic resemblance between two common species of North American dragon-flies, viz., *Libellula pulchella*, of Drury, and *Plathemis trimaculatus*, of DeGeer. The ♀ of the latter mimicked either sex of the former, though the ♂ was very dissimilar. Mr. Bates thought it might be a case in which the markings repeated themselves, rather than one of actual mimicry. The matter was referred to the observation of American entomologists, in order to suggest a reason for the apparent mimicry. The question of the liability or non-liability of dragon-flies to the attacks of birds having been raised, Mr. F. Smith stated that he had seen swallows devouring *Agriionidæ*; and Mr. Briggs had observed a fight between a large species (*Æschna*?) and a sparrow in the streets of London, in which the former beat off its aggressor. Mr. Jenner Weir incidentally remarked that he had seen the ♀ of a species of *Agriionidæ* descend beneath the surface of the water in order to deposit its ova.

Mr. F. Smith exhibited the cocoons of *Tiphia tarda*, Say, given to him by Mr. Riley, and avowed his belief that the larvæ of *Tiphia* devoured those of *Aphodius*.

Mr. Müller called attention to the fact that the larvæ of a *Thrips* were destructive to green peas, of which they devoured the exterior portion of the pods.

Mr. McLachlan read notes on the identification of *Myrmeleon formicaleo*, *formicarium*, and *formicalyns* of Linné, pointing out the confusion existing in Linné's descriptions, and their mis-application by later writers.

Mr. Smith's catalogue of British *Hymenoptera Aculeata* was on the table.

4th December, 1871.—The President in the Chair.

Mr. S. Stevens exhibited, for Mr. Shearwood, a remarkably dark variety of *Argynnis Aglaia* from Teignmouth.

Mr. Bond exhibited, for Mr. Doubleday, varieties or malformations of various British *Lepidoptera*.

Mr. Janson exhibited a collection of insects (principally *Coleoptera*) from the diamond fields of South Africa.

Mr. Higgins exhibited *Tetracha crucigera* of McLeay, sent to him from Sydney.

Professor Westwood exhibited a series of drawings and specimens with a view to identify *Papilio Thersander* of Fabricius, and remarked that Donovan's figure had been evidently made from a mutilated copy of the figure of the *Papilio* in Jones' 'Icones,' completed from *Charaxes Fabius*.

Mr. Müller stated that Natterer had observed the attacks of one of the Brazilian *Falconidæ* upon dragon-flies, which formed its habitual food. Mr. Horne had not seen these insects attacked by birds in India.

Major Parry communicated a note upon the genus *Lissapterus* of H. Deyrolle.

Mr. W. F. Kirby communicated a continuation of his synonymic notes on *Lepidoptera*.

NOTES ON SOME CORSICAN INSECTS.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(Continued from Vol. vii, p. 250.)

(WITH DESCRIPTIONS OF NEW GENERA AND SPECIES OF *HEMIPTERA*
BY JOHN SCOTT.)

I am requested to prefix a few words to the following descriptions of Corsican *Hemiptera* by Mr. Scott, who is at present in Spain. The new species here published were taken by me in the summer of 1870. *Antipalocoris* seems the most worthy of remark. It belongs to the *Notonectidæ*, and is allied to *Anisops niveus*, Fab. Both species occur in the rivers of Corsica, the *Antipalocoris* abundantly, swimming in small shoals, like fishes, against the current. *Anisops*, I believe, has only been noticed hitherto as African. Its pearly-white hemelytra give it the appearance of a young *Notonecta*. The male is furnished with a conspicuous frontal horn. Of the other *Aquatilia*, I noticed a *Naucoris* (in the larval state), probably *parvulus*, Fieb., *Limnobates*, *Velia* (winged), *Hebrus*, *Sigara*, swarming at the edges of rivers and ditches, *Plea*, *Ranatra*, and *Hydrometra naïas*, De G. Of other *Hemiptera*, the most remarkable were *Cantacader Staudingeri*, Bär., at roots of grass, Campoloro; *Harpactor hæmorrhoidalis*, Fab., which is also the commonest species in Algeria; *Colliocoris niger*, Fieb., and *C. griseus*, Rossi; *Holotrichius* (sp. ?), in larval state, living on elm trees, and preying on the innumerable larvæ of *Galeruca calvariensis*, L., and clothed, like *Reduvius*, in a sort of grey frieze, composed of particles of dust; *Pirates strepitans*, Ramb.; *Nabis viridulus*, Spin., on the tamarisk, found also in the Camargue, near Arles; *Pyrrhocoris ægyptius*, L.; *Lygæus apuans*, Rossi, on mountain sides; *Lygæosoma reticulata*, H.-Sch.; *Nysius senecionis*, H.-Sch.; *Paromius leptopoides*, Bär.; *Henestaris*, doubtless the same as the British species; *Ophthalmicus sículus* and *O. distinctus*, Fieb., the former throughout the island, the latter on sandy grass-plats near the sea; *Aploscelis bilineatus*, Fieb., in marshes of the Campoloro, known only as Corsican; *Megalonotus*, all the British species, and *niger*, Fieb.; *Scolopostethus cognatus*, Fieb., Corsican only; *Trapezonotus Ullrichi*, Fieb., *Dieuches pulcher*, H.-Sch., *D. Sphragadimium* Am., and *D. luscus*, Fab., all equally abundant; *Rhyparochromus Bolandri*, L., and *R. vulgaris*, Schill., and others of the genus; *Beosus quadratus*, Fab., *B. saturnius*, Rossi, and *B. Douglasi*, Fieb. (I know not whether the last has been described; it was discovered during my first visit to the

island, and found again in 1870); *Emblethis arenarius*, L.; *Oymodema tabida*, Spin.; *Macroplax Helferi*, Fieb., abundant on hill-sides near Ajaccio, also in the pine forest near Arcachon; *Neides aduncus*, Fieb., common; *Apophymus pectoralis*, Fieb., peculiar to Corsica (very like a *Neides*, but distinct on close inspection), in vineyards near Ajaccio; *Spathocera lobata*, H.-Sch.; *Pseudophlæus Walllii*, H.-Sch.; *Ceraleptus gracilicornis*, H.-Sch.; *Coreus hirsutus*, Fieb., and *C. hirticornis*, Burm.; *Microlytra fossularum*, Rossi; *Verlusia sinuata*, Fieb., and *V. sulcicornis*, Fab.; *Centrocarenus spiniger*, Fab.; *Rhopalus Abutilon*, Rossi, *R. truncatus*, Ramb., and other *Rhopali*; *Brachycarenus tigrinus*, Schill.; *Loxostethus virens*, L.; *Oalocoris Ticinensis*, Meyer-Dür, and *C. vandalicus*, Rossi, and others; *Pycnopterna striata*, L.; *Cyphodema Meyer-Düri*, Fieb.; *Camaronotus clavatus*, L.; *Rhaphidogaster griseus*, Fab., abundant on poplar trees; *Rhacostethus lunatus*, Linz.; *Eusarcocoris Helferi*, Fieb., and *E. binotatus*, Hahn; *Mormidea*, all the species, including *varia*, Fab. (which is not a var. of *baccarum*, L.; I found plants infested with it alone); *Oimeæ distinctus*, Meyer-Dür, and others; *Strachia festiva*, L., *S. picta*, H.-Sch., and others; *Zicrona cærulea*, L.; *Podops sculus*, Costa; *Ælia Germari*, Küst., and others; *Ælioides*, *Sciocoris umbrinus*, Wolff, and *S. marginatus*, Fab.; *Brachypelta aterrima*, Först., on the sea-shore at Ajaccio, under spurge and *débris*, and in the mountains near Bastelica; *Oydnus Helferi*, Fieb.; *Graphosoma semipunctata*, Fab., and *G. lineata*, L.; in Corsican examples of the latter the red stripes are replaced by yellow; *Ancyrosoma albolineata*, Fab.; *Odontotarsus grammicus*, L., and *O. caudatus*, Klug (the latter is rarely found; it is also among some Spanish Hemiptera sent me by Dr. Sharp); *Odontoscelis dorsalis*, Fab., and *Coptosoma globus*, Fab.

The ruthless destruction of about 200 specimens by sailors or porters at Marseille, on the way home, has perhaps limited the list of novelties found by Mr. Scott among my *collectanea*. When the war broke out, I was at Bastelica, and, of course, without a passport. On landing at Marseille, I found that that preposterous nuisance was revived, and the absence of the document gave rise to the usual amenities. A long wrangling conference terminated in my consenting to "establish my identity," which was happily, though not conclusively, accomplished by the production of the old envelope of a letter. Meanwhile, the luggage had fallen a prey to the sportive fury of the *facteurs*, and the labours of several weeks were annihilated. The embarrassment of the passport official on this occasion was truly amusing. He had orders to pass no one without proper papers, and very few on

board the steamer were provided with passports. He had some confused notion of "identification," for which he clamoured incessantly. I might have passed as 'Lord Jones,' if I had chosen. It was vain to plead corporeal presence, as a proof that I was myself; but the *litera scripta* acted on him like magic.

St. Albans: October 14th, 1871.

Family.—LYGÆIDÆ.

Genus.—MACROPTERNA, Fieb.

MACROPTERNA BICOLOR, Scott, *sp. n.*

Black and white, somewhat oval.

Head black, slightly shining, thickly and deeply punctured; *antennæ* yellow, first joint black, fourth brown.

Thorax: *pronotum* black, slightly shining, thickly and deeply punctured, except a small space on either side of the centre a little before the middle of the disc; *scutellum* black, punctured, except a short, longitudinal, posterior, central keel; *elytra* white, or very pale yellowish-white; *clavus*, nerves prominent; *corium*, base very narrowly black, apical half black, nerves prominent; *membrane* black, the anterior and posterior margins narrowly, and an oval patch, having its upper margin in a line with the apex of the cuneus, white, membrane suture, very narrowly but distinctly white, nerves alternately darker or lighter as they pass through the respective parts; *sternum* black, thickly punctured; *mesosternum* on the sides yellowish-white; *legs* black; *thighs* black, shining, first pair at the apex white, second and third brown; *tibiæ* whitish, base of all the pairs very narrowly black, apex more or less brownish; *tarsi* brownish, third joint darker.

Abdomen, underneath black or pitchy-black.

Length, $\frac{3}{4}$ — $\frac{1}{2}$ line.

This insect bears some slight resemblance to *Microplax plagiatus* in the markings on the membrane; but, while, in the last named, the character assumes a J-form between the second and third nerves, in *M. bicolor* the character is much broader and reaches the inner margin, and may be roughly compared in shape to the ordinary rounded form of the handle of a walking-stick or umbrella.

Genus.—BRACHYPLAX, Fieb.

BRACHYPLAX LINEARIS, Scott, *sp. n.*

Narrow; head and pronotum brownish-yellow, thickly and rather deeply punctured.

Head brownish-yellow or reddish-brown, somewhat dusky across the base of the central lobe; *antennæ* black, stout, basal joint reddish-yellow; *eyes* red.

Thorax: pronotum brownish-yellow, on the sides more or less dark brown, posterior third greyish-white; scutellum black, wrinkled transversely; elytra greyish-white; clavus at the base punctured as far as in a line with the apex of the scutellum; next the suture a distinct row of punctures; corium slightly contracted about in a line with the middle of the clavus, and with a row of fine punctures next the anterior margin; membrane very long, very pale fuscous; legs yellow; thighs, first pair very stout, the three teeth at the apex, which gradually diminish in size, are black; tibiæ pale yellow; tarsi, third joint of all the pairs slightly dusky at the apex. Length, $1\frac{1}{2}$ line.

The above insect bears some little resemblance to the *Stenogaster* (*Ozycareus*, Fieb.) *pallens*, H.-Schf., Wanz. Ins., vol. ix, p. 314, fig. 963; but it is much more linear, and has not the same stature.

Genus.—LITOSOMA, Doug. and Scott.

LITOSOMA ATRICAPILLA, Scott, *sp. n.*

Narrow, green, clothed with depressed black hairs.

Head: antennæ pale yellowish, first joint with a broad black ring before the apex, second narrowly black at the base, third and fourth joints brownish, the former narrowly piceous at the base; eyes pitchy-black.

Thorax: pronotum and scutellum green, the former with a distinct transverse channel before the middle; elytra green, clothed with depressed black hairs; membrane pale, inner margin black; lesser cell black, apical half of the larger cell, and a broad margin exteriorly, fuscous-brown, cell nerves white; on the anterior margin, below the apex of the cuneus, and from the apex of the lesser cell nerve, a longitudinal black streak, the latter the longer of the two, the apex enclosed between the streaks blackish; sternum green; legs green; thighs, first and third pairs on the lower margin with a pitchy spot, that on the former small and somewhat indistinct; tibiæ pale, very narrowly brown at the apex; tarsi yellowish, base of the first joint and third entirely brown.

Abdomen green.

Length, 1 line.

The characters of the antennæ and thighs are sufficient for the immediate recognition of this insect. The black hairs are also peculiarly dense; but, as the specimens are rubbed, I am unable to say whether these were originally uniform throughout, or in bands, or distributed in patches.

Genus.—MIMOCORIS,* Scott, *g. n.*

Elongate; corium slightly narrowed from the base to the middle, from thence to the base of the cuneus gradually widened.

Head long, pentagonal, very much deflected, wider across the eyes than long; antennæ shorter than the body, first joint shortest, about half its length reaching

* *Mimos*, an imitator; *koris*, a bug.

beyond the end of the face, second clavate, four times as long as the first, third and fourth filiform, the former not half the length of the second, the latter about half the length of the third; *eyes* large, prominent, almost their whole width projecting beyond the anterior margin of the pronotum; *rostrum* reaching to the third pair of coxæ, first joint stout, as long as the head.

Thorax: *pronotum* very considerably deflected towards the head, anterior margin about the width of the head between the eyes, and with a narrow collar; sides almost straight, the width across the posterior margin at least three times greater than the anterior, slightly concave across the scutellum, and rounded towards and at the hinder angles; *scutellum* triangular, very convex, considerably higher than the clavus, depressed in the centre; *elytra* longer than the abdomen, slightly tapering from the base to the middle, and from thence gradually widening out to the base of the cuneus; *cuneus* long; *legs* long, thin, third pair longest; *tibiæ*, third pair somewhat bent, and slightly thickened below the base; *tarsi* short, basal joint shortest, second and third of almost equal length.

MIMOCORIS CAMARANTOIDES, Scott, *sp. n.*

Dark brown, with a velvety appearance, and sparingly clothed with almost erect, short, dark hairs.

Head: *crown* and *face* reddish or somewhat fuscous-brown, posterior margin of the former slightly raised; *antennæ* yellow, second joint slightly brownish-yellow, base narrowly, and apical third black, third yellow, apical half brown, fourth brown, apex narrowly reddish; *eyes* dark brown; *rostrum* brown, apex black.

Thorax: *pronotum* dull red, slightly shining, coarsely wrinkled transversely, across the posterior margin more or less broadly brown; *scutellum* dark brown, shining, or with a slight reddish shade, posterior portion as far as the deep depression finely wrinkled transversely; *elytra* dark brown, with a velvety appearance, with a curved silvery-white band, extending from near the base of the anterior margin of the corium, where it is widest, across the clavus to the apex of the scutellum; posterior margin silvery-white, base very narrowly silvery-white; across the middle of the disc, and in an oblique direction towards the apex of the interior margin is a faint milky-white irroration, more or less broad and distinct in certain lights; *cuneus* long, dark brown; *legs* clear reddish-brown; *thighs*, third pair pitchy-red, apex of all the pairs on each side with a distinct white patch; *tibiæ* yellow, base of the first pair narrowly, and of the second pair broadly, fuscous, third pitchy-red, apical third pale yellow; *tarsi* piceous, second joint yellowish.

Abdomen, underneath black.

Length, 2 lines.

This insect, at first sight, might readily be mistaken by any one for a species of *Camaranotus*; but the projecting eyes, red pronotum, and different position of the white bands on the elytra at once mark its distinctness.

Three specimens were taken by Mr. Marshall.

(To be concluded in our next.)

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE LIFE-HISTORIES
OF CERTAIN COLEOPTERA.I.—*DENDROPHAGUS CRENATUS*, Payk.

BY F. BUCHANAN WHITE, M.D.

With the exception of a description by C. von Gernet in the *Horæ Soc. Ent. Rossicæ*, vol. vi, 1868 (*Beiträge zur Käferlarvenkunde*, zweiter Beitrag, p. 19), of two larvæ supposed to belong to this species (but which were not reared), very little seems to have been written regarding the life-history of this rare and interesting beetle; probably, for the best of all reasons, that very little is known. Having perhaps a more intimate acquaintance with it than any one else in Britain, I am glad to be able to throw a little more light on the subject.

The larva has been supposed by some to be carnivorous, but it is truly phytophagous, feeding on the inner layer of the bark of dead trees of the Scotch-fir (*Pinus sylvestris*), and more rarely of the Larch (*Larix europæus*). The perfect insect lives in the same situations, preferring places where the bark is rather loose and cracked. In such places it remains quiet during the day, resting either upon the bark or upon the wood, but, when disturbed, it runs off with considerable celerity. Towards night-fall, the beetle seems to come forth from its hiding-place, as at least in one instance it has been captured "coursing rapidly, towards evening, over a bare fir log" (E. C. Rye, E. M. M., iii, 63).

In the perfect state, *Dendrophagus* has been captured in May, June, July, August, and September; and, though I am not aware that it has been observed, it probably passes the winter in the perfect state, the specimens taken in May, June, and July, having probably hibernated. As, however, larvæ of different sizes are to be met with throughout the summer, it is possible that the spring specimens of the beetle may have been recently excluded from the pupæ, though all my specimens emerged in August.

Larvæ have been noticed in every month from May to September; and frequently larvæ of different sizes (and probably, therefore, of different ages) were found at the same time and place. Further observation is required before the duration in the larval state can be ascertained. It is not improbable, however, that it continues for at least one year, if not longer. Some larvæ, at least, hibernate when nearly of full size. The duration of the pupal state is from a fortnight to three weeks. In August, soon after their exclusion from the pupa, several specimens were observed *in cop*. I did not succeed, however,

in ascertaining that any eggs were laid, and it is not improbable that the ovipositing does not take place till the following spring or summer.

The probable course of existence of *Dendrophagus* is, I think, this:—the eggs are laid in spring and early summer by hibernated females; the larvæ feed for twelve or fourteen months, becoming pupæ the second summer after their exclusion from the egg, and the beetles appear about August.

Dendrophagus seems to prefer a fallen tree to one still standing, though I have seen a specimen taken (by Mr. Hislop) off the horizontal part of a standing tree. The most productive tree I met with was a fallen one, whose trunk was prevented from coming in contact with the ground by the branches; this tree produced four specimens. The manner in which I succeeded in rearing the larvæ was by keeping them along with pieces of bark in a jam-pot, with top ground and covered by a square of glass, the whole being placed in a dark cupboard. A good look out should be kept for mould, and care be taken *not* to introduce in the bark the larvæ of *Quedius lævigatus* or other marauders.

Description of the larva: Dr. Sharp having drawn up a description of the larva, and kindly placed it at my disposal, I give it in preference to making another.

“Of a pale yellowish-white colour, elongate, depressed and parallel, with rather long antennæ. These are of three joints, and are as long as the head and following segment; the first joint is only about half the length of the second, but twice as stout; the third joint is very slender, and about as long as the second.

“The lobe of the maxilla is fringed at the apex, and bears a three-jointed palpus, the third joint of which is more slender and shorter than the second, the basal joint is very short and obscure, and should perhaps be rather considered as the support of the palpus than as a true joint.

“The labial palpi are short, stout, and two-jointed, the terminal joint about twice as long as the basal one.

“The mandibles are very short and stout, the extremity is abruptly bent inwards, is slender, sharp, and three-toothed.

“The six legs are rather long, and each is terminated by a single claw.

“The segment next to the head is quadrate and transverse, of a different shape to the others.

“The upper side of the twelfth segment bears two long, slender antenna-like processes, directed backwards; these processes are three-jointed, the last joint being long, slender, and almost like a hair. This segment has also each posterior angle produced at the side, behind, into a stout spine.

"The thirteenth segment is pointed, and very much narrower than the others.

"This larva is very agile and quick in its movements, and, when disturbed, moves the hinder part of its body quickly from side to side. It feeds on the inner portion of the bark of the Scotch-fir, when this is in a decaying condition."

The first larva that I saw was found by Mr. Hislop, who suspected that it was the larva of *Dendrophagus*, but did not succeed in proving it to be so by rearing it. The larvæ described by C. von Gernet (*loc. cit. supra*), which were found under the bark of a fallen birch near Murino (in the Government of St. Petersburg), evidently belong to another genus.

Description of the pupa: yellowish-white, oblong, depressed, and tapered towards the tail. Head deflected under the thorax, with a hair-tipped spine in front of each eye. Eyes brown. Antennæ—first joint extending at right angles to the head, the others at right angles to the first joint and parallel with the body, passing over the two first pair of legs and under the third; apex of each joint, except the first with a circlet of short, stout spines.

Pronotum quadrate, excavated in centre, angles rounded, margin furnished with hair-tipped spines, two from the front margin; at each anterior angle a group of three, with their bases connected by a membranous expansion; at each posterior angle a group of two, with their bases connected as in the anterior spines. Elytra not conspicuous, closely appressed, and directed under the sternum.

Legs curved under the thorax. Femora protruding and directed backwards; from the apex of each spine four tubercles, the two anterior of which are hair-tipped, except in the third pair of legs, where only the lower anterior tubercle is hair-tipped.

Hind-body with a central depressed line; each segment with, above the sides, a depressed tubercle pointing backwards, and with an oblique, raised line running from the base of each tubercle towards the preceding segment. Fourth, fifth, and sixth segments with a long hair-tipped spine on the extreme side, below the tubercle.

Under-side. Elytra reaching to nearly the fourth segment of the hind-body.

Length 4 lines.

The larva, when about to assume the pupal state, attaches itself firmly to a piece of bark by the thirteenth segment, and the pupa remains attached by its anal segment to the larva-skin.

Perth: January 9th, 1872.

NOTES ON CARABIDÆ, AND DESCRIPTIONS OF NEW SPECIES (No. 12).

BY H. W. BATES, F.L.S.

Genus MIZOTRECHUS, nov. gen.

Gen. Trechico (Leconte) *proxime affinis, at corpus robustius, magis elongatum, mentum medio dentatum, tarsi breviores, crassiores. Caput robustum, collo crasso, fronte foveis duabus latis leviter impressis signata. Mandibulæ longe exsertæ, modice falcatæ. Maxillæ longe exsertæ, intus spinis longis armatæ. Palporum articulus ultimus ad basin penultimo latitudine æqualis, gradatim acuminatus. Mentum dente mediano forti armatum. Thorax quadratus, postice leviter angustatus, angulis distinctis. Antennæ breves, sub-moniliformes, articulis a 4^{to} quadrato-ovatis, compressis, pubescentia a tertiæ apice incipienti. Elytra ad apicem lata, oblique sub-truncata, suprâ depressa, striis 8^{va} et 9^{na} antice conjunctis, postice paulo gradatim divergentibus, 8^{va} per apicem ducta; interstitio tertio haud tripunctato. Pedes robusti, tarsi suprâ hirsutis, articulis crassis, ad basin vix angustatis.*

Besides the dentate mentum, thick tarsal joints and square thorax, this genus differs from *Trechicus* in the absence of the three setiferous punctures from the third elytral interstice. The mandibles and maxillæ also are much more exserted, approaching *Diploharpus* in this respect; the terminal joint of the inner maxillary palpi is also very much shorter than the basal.

I have compared the species in these respects with *Trechicus umbripennis*, Lec., and *Tr. fimicola*, Woll.

MIZOTRECHUS NOVEMSTRIATUS, n. sp.

Elongatus, robustus, parallelopipedus, rufo-castaneus; thorace magno, postice rectè angustato, angulis posticis dentiformibus, prominulis, margine postice dilatato-exp!anato, suprâ impunctato; elytrorum striis omnibus impressis, indistincte punctulatis, ad basin sub-oblitteratis, ibique 1^{ma} et 2^{nda} in foveam basalem desinentibus, striola scutellari distincta. Long. 3 lin.

Ega.

MIZOTRECHUS LÆVILATERIS, n. sp.

Minus parallelus, elytris oblongo-ovatis, thorace sesqui latioribus; obscure castaneus, oris partibus, antennis, pedibus, abdomineque fulvo-testaceis; thoracis lateribus antice leviter rotundatis, angulis posticis distinctis, rectis, haud prominulis; elytris sub-converxis, striis 1—5 acutè impressis, impunctatis, basin haud attingentibus, 6^{ta}—7^{ma} sub-oblitteratis, 8^{va} postice flexuosa, ibique margine ocellato-punctato. Long. 2½ lin.

The sutural or first stria ends abruptly at a distance from the scutellum, the others are successively a little longer, but the third to

the seventh are obliterated before the apex; the eighth, as in *Diplo-harpus*, is prolonged nearly to the suture, becoming sharply impressed, and leaving a sharp ridge on its inner side.

One of my specimens has three joints of the anterior tarsi distinctly dilated, with broad, triangular joints, and is evidently a male.

Ega.

MIZOTRECHUS OZENOIDES, n. sp.

Oblongus, vix convexus, nigro- vel rufo-castaneus, politus, capite (epistomate rufo excepto) nigro, elytrorum apice indeterminate, suturâ, et interdum margine pallidioribus; foveis frontalibus magis impressis, extus obliquis; antennis crassis, articulis 4—10 transversis; thorace quadrato, postice parum angustato, angulis posticis obtusis sed distinctis; elytris ad apicem obtuse rotundatis, suprâ politis, lævibus, vel striis nonnullis prope suturam certo sitâ apparentibus, stria 8^{va} apicem versûs fortiter impressa, ibique margine punctigero lato.

Long. $1\frac{1}{2}$ lin.

By its thick antennæ, smooth elytra, shape and colours, much resembling certain species of *Pachyteles* (sub-fam. *Ozeninæ*).

Ega and St. Paulo, Upper Amazons.

MIZOTRECHUS PRÆCISUS, n. sp.

Oblongus, vix convexus, rufus, capite suprâ nigro, elytris castaneis, latera versûs obscurioribus; antennis minus crassis, articulis 4—10 oblongo-ovatis; thorace breviori, valde transverso, lateribus rotundatis, postice magis quàm antice angustatis, angulis posticis obtusis, sed distinctis; elytris ad apicem obtuse rotundatis, striis 6 distinctis punctatis, 7^{ma} obsoleta, 3^{ta}—6^{ta} ad apicem abbreviatis.

Long. 2 lin.

R. Tapajos.

MIZOTRECHUS LÆVIGATUS, n. sp.

Elongato-ovatus, planatus, politus, capita suprâ, thoracisque disco nigris, elytris rufo-castaneis, reliquis fulvo-testaceis; thorace quadrato, transverso, postice modice angustato, antice vix rotundato, angulis posticis obtusis, margine basali utrinque obliquo; elytris obtuse rotundatis, suprâ obsolete striatis, strid 8^{va} postice flexuosâ, acute insculptâ; antennis robustis, articulis 4—10 oblongis.

Long. 2 lin.

Received from Paris with the names "*Trechus majusculus*, Chaud.," and "*Acupalpus ingratus*, Chaud.," but no such species have been, to my knowledge, described.

Vera Cruz, Mexico.

MIZOTRECHUS VIXSTRIATUS, n. sp.

Elongato-ovatus, planatus, politus, castaneus, capite suprâ nigro, antennis, oris partibus, pedibusque fulvis; thorace quadrato, transverso,

postice recte vix angustato, antice vix rotundato, angulis posticis obtusis; elytris ad apicem late rotundatis, suprâ striis sex vix impressis, 8^{va} postice flexuosâ, acute insculptâ; antennis robustis, apicem versûs sub-clavatis; tarsis angustioribus. Long. 2 lin.

Extremely near *M. lævigatus*, differing in the elytra being more distinctly striated, and the disc of the thorax on each side not being black. I have compared two examples of each. The tarsi (especially the posterior) are much more slender than in the typical species, and are but slightly pubescent above; but the mentum is decidedly toothed, and the species belongs therefore rather to *Mizotrechus* than to *Trechicus*.

Rio Janeiro, Brazil, at Tejuco. From the collection of the Rev. H. Clark.

Genus LACHNACES, nov. gen.

Gen. Olisthopo vel Badistro similis sed gen. Eucæro vere affinis. Corpus late sericeo-iridescens. Caput triangulare, postice modice angustatum; oculis magnis, prominulis, fronte vix bi-impressâ. Labrum elongatum, quadratum, antice leviter sinuato-truncatum. Mandibulæ elongatæ, ad apicem graciles, falcatæ. Palpi valde elongati, pubescentiâ densâ vestiti, articulo ultimo elongato, apice acuminato, precedenti multo grossiori. Antennæ valde elongatæ, filiformes, graciles, articulis 3—11 pubescentiâ densâ vestitis. Mentum haud profunde emarginatum, medio breviter obtuse (vel haud) dentatum. Thorax transversus, baseos medio anguste lobato. Elytra fortiter striata, ad apicem obtuse late rotundata; margine basali et humerali explanato-productis, striolâ basali nullâ, interstitio 3^{tio} tri-punctato, striâ marginali per apicem continuatâ. ♂ Tarsi antici articulis tribus fortiter dilatatis, 1^{mo} elongato-triangulari; 2—3 elongato-cordatis, subtus bi-seriatim squamosis.

The curious little *Carabidæ* forming this genus, have somewhat the facies of *Olisthopus*, with the strong iridescent gloss of the *Loxandri*, near which I had placed them; but the densely pubescent and acuminate palpi and lobed thorax show their near relationship with *Eucærus*, next to which the genus must henceforth be ranged. The palpi are extremely long, the second and third joints of the maxillary especially so; the fourth is also elongated, but of an elongate ovate shape, with gradually pointed tip.

LACHNACES SERICEUS, n. sp.

Oblongus, latus, piceo-niger, lætissime sericeo-iridescens, oris partibus, antennarumque articulis 4 basalibus (cæteris pallidioribus) rufo-testaceis; thorace valde transverso, lateribus æqualiter fortiter rotundatis, angulis

posticis nullis, anticis obtuse rotundatis, baseos medio anguste lobato-producto, suprà convexiusculo, lævi, lined dorsali suprà lobum fortiter impressâ, marginibus angustis, explanato-reflexis, piceis; elytris fortiter simpliciter striatis, certo sitû sericeo-opacis, iterumque splendide iridescentibus, suturâ, marginibus reflexis, epipleurisq. rufo-piceis.

Long. $3\frac{1}{2}$ lin. ♂.

Larger than any *Eucærus*, and, like the following, of totally different facies from any of that genus.

Ega.

LACHNACES OLISTHOPOIDES, *n. sp.*

Oblongus, angustior, nigro-piceus, iridescens; oris partibus, antennis, pedibusque rufo-testaceis; thorace transversim quadrato, angulis posticis obtusis, rotundatis, lateribus æqualiter rotundatis, baseos medio lobato-producto, lined dorsali suprà lobum fortiter impressâ, basi minute strigoso; elytris modice striatis.

Long. $2\frac{1}{2}$ lin. ♀.

Ega.

LACHNACES BADISTRINUS, *n. sp.*

Oblongus, rufus, læte iridescens, capite suprà (epistomate excepto) nigro, elytris utrinque vittâ latâ, indeterminatâ, fuscâ notatis; thorace transversim quadrato, angulis anticis acutis, posticis distinctis sed obtusis, lateribus modice rotundatis, baseos medio modice producto, margine explanato ad angulos posticos paulo latiori et reflexo; elytrorum striis modice impressis.

Long. 2 lin. ♀.

In this species, I observe no tooth in the emargination of the mentum.

Ega.

EUCÆRUS OPACICOLLIS, *n. sp.*

Piceo-fuscus, capite thoraceque alutaceis, opacis, elytris sericeo-nitentibus, oris partibus, antennis, pedibusque flavo-testaceis; thorace late cordato, postice sinuatim fortiter angustato, angulis anticis rotundatis, posticis obtusis sed distinctis, basi late breviter lobato, marginibus laterali-bus explanatis, prope angulos posticos dilatatis; elytris fortiter æqualiter striatis.

Long. $2\frac{1}{2}$ lin.

Larger, and of somewhat different facies from the other *Eucæri*, for which reasons it had got astray in my collection among the species of *Lachnaces*. It is allied to *Eu. sulcatus*; but differs from all species in its minutely and beautifully shagreened or strigose head and thorax, unicolorous antennæ, &c.

Ega.

Kentish Town: January, 1872.

DESCRIPTION OF A NEW SPECIES OF ANISOTOMA FROM GREAT BRITAIN.

BY E. C. RYE.

ANISOTOMA LUNICOLLIS, *sp. n.*

Ovato-oblonga, convexa, nitida, ferruginea, antennarum clavâ graciliore, fuscescente, articulo apicali quam penultimo angustiore; prothorace elytris paulo latiore, lateribus (ac præcipue apicem versùs) valde rotundatis, apice emarginato, basi truncato, suprâ subtilius crebre punctulato; elytris punctato-striatis, punctis crebris minoribus, interstitiis leviter clavatis sat crebre subtiliterque punctulatis; pedibus intermediis posticisque crassiusculis, breviusculis, tibiis anticis linearibus.

Long. corp. $1\frac{1}{2}$ lin. (*Anglic.*).

Maris tibiæ intermediæ ad apicem dilatatæ leviterque incurvatæ, tarsis crassiusculis; femora postica compresso-dilatata, subtilius ante apicem denticulatum sinuata, tibiis haud elongatis, paulo incurvatis, leviter sub apicem incrassatis.

Intermediate between *A. calcarata* and *A. hybrida*; differing from the former (of which it equals average examples in size) as follows: its thorax is wider, with the sides so rounded that the usual anterior angles are entirely—and the posterior angles almost entirely—obliterated; and with the base truncate, there being but the faintest possible indication of the sinuations before the posterior angles: its antennæ have a smaller club: its build is rather more oblong, the contraction of the sides of its elytra towards the apex not commencing so near the shoulder: the punctures of the striæ of its elytra are more closely packed and not so large, those of the interstices (which are not quite so flat) being rather more evident and decidedly more numerous: and the hind legs of its male are scarcely perceptibly elongated, the femora having only a minute denticle at the apex beneath.

From *A. hybrida* it differs in its somewhat less oblong build, its wider thorax, which is less closely punctured and has no vestige of anterior angles, the slightly stronger punctuation of the striæ of its elytra, which exhibit no trace of transverse sub-strigosity, and the denticulated femora of its male (*cf* Kraatz, Stettin. Ent. Zeit., 1852, 300, for ♂ characters of *A. hybrida*, unknown to Erichson).

The points of structure indicated above seem to render comparison with any other recorded European species unnecessary.

Of this interesting insect, five examples (all ♂) were taken by the indefatigable and successful Mr. R. Lawson, in flood-refuse near Scarborough; and I am indebted to that gentleman for two of these

specimens. I have also seen a small ♀ example (named, with a query, *hybrida*) in Mr. G. B. Waterhouse's collection, taken in early summer at Sydenham, and which I think must be referred to this species.

10, Lower Park Field, Putney, S.W. :

January, 1872.

Note on the occurrence in England of Hydnobius spinipes, Gyll.—Both *Hydnobius punctatus*, Schmidt, and *H. spinipes*, Gyll., are included in the 1st and 2nd editions of Mr. Crotch's catalogue; but the former of these species alone is recognized in the catalogue recently published by Dr. Sharp. As, however, I have carefully examined undoubtedly British individuals answering to the descriptions of *H. punctatus* and *H. spinipes* given by Thomson (who points out Erichson's erroneous reference of both to one species), I have thought it advisable again to register the latter as indigenous, and to give brief characters for the two insects.

H. PUNCTATUS, Schm., Er.; Thoms., Sk. Col. iv, 27. This is of the size of an average example of *H. punctatissimus* (viz., $1\frac{1}{4}$ lin., Engl.), which it most resembles, and from which it may be known by its clear testaceous colour; its thorax being not so flat and more rounded in front; its elytra having the rows of interstitial punctures almost as deep and as regular as the usual striæ, and more closely packed, so that the surface is obsoletely and obliquely transverse-strigose; and by its male having a tolerably large tooth-shaped spine on the under side of the posterior femora, at some distance from the apex, instead of the whole femur being compressed and produced into a broad recurved tooth at the apex, as in ♂ *punctatissimus*.

In addition to the localities already recorded for this species, it may be observed that one or two examples of it have been taken near Scarborough by my friend Mr. T. Wilkinson, to whom I am indebted for my sole type.

H. SPINIPES, Gyll.; Thoms., l.c., 29. This is considerably smaller than *H. punctatus*, being only a little larger than *strigosus*; and may be distinguished from the former, apart from size, by its longer thorax, which is much more finely punctured, and by its elytra being also much more finely punctured, and more evidently obliquely transverse-strigose.

From *H. strigosus* it may be known by its stouter build and broader legs, the less evident strigosity of its elytra, and the stouter spine on the under side of the posterior femora of its male.

I possess a single example (a ♂, having the posterior femora toothed beneath much as in *punctatus*), taken near Croydon.—ID.

Note on the occurrence of Homalium rugulipenne, Rye, on the Welsh coast.—As this insect has apparently remained unique in my collection since it was described in 1864, it was with great pleasure that I recently found three specimens of it (agreeing *ad punctum* with my type) among some beetles sent to me for determination by Mr. Edwin Roper Curzon, who has, in the most liberal manner, presented me with two of them. Mr. Curzon informs me that the species was very abundant indeed under seaweed on the sand hills at Newton Nottage, Glamorganshire, in November, 1870, but only in one spot, where a storm had thrown up the weed

above the usual high-water mark. The plebeian *Cercyon littoralis* and *Philonthus xantholoma* swarmed with it. My own impression as to my original specimen (for it was taken long before I gave any attention to the *Brachelytra*) has always been that it was taken on the shores of the Thames, below Gravesend: and also that my friend, Mr. G. Lewis (now in Japan), had more of it in his collection.—ID.

Note on the earlier stages of Hypera polygoni.—At Brandon, last summer, I noticed that many shoots of *Lychnis vespertina* were prevented from growing, and formed into pseudo-galls, resembling great buds three or four inches long, the leaves being all thickened and turned in at the tips. Some of these I secured for my friend, Mr. H. W. Kidd; and, happening to open one of them, saw plenty of the minute orange-coloured larvæ of a *Cecidomyia*, and two larvæ sufficiently like those of internal-feeding *Lepidoptera* to deceive me, especially as I took care not to disturb them, but closed up the gall and put it into a tin box. A few days after, I noticed that they had formed curious globular cocoons of silken net-work; if I recollect rightly, *outside* the gall; and some time afterwards a specimen of *Hypera polygoni* emerged from each. There were three of them, one larva being overlooked at first. They were, I think, eating the substance of the leaves forming the gall. The economy of this species is, I am aware, already recorded; but the plant affected in this instance is so much at variance with that from which the insect takes its name, that these notes may not be altogether uninteresting.

The following rough description of the larva was made at the time:—

“Wrinkled, thickest in the middle, flattened beneath; bluish-green, dorsal vessel pale yellow, spiracular line and feet yellow; head black, very small. Length about half an inch.”—CHARLES G. BARRETT, 5, Heigham Road, Norwich, 8th December, 1871.

Note on Ceuthorrhynchideus Chevrolatii.—As bearing upon the question whether specific value is to be correctly attributed to this insect, I may note that during the past summer I have found it on the slope of the S. E. Railway bank, between Ashford and Hythe Stations, in some small quantity, but in an exceedingly restricted space. Sporadic individuals have also occurred to me in other parts of this neighbourhood.—W. TYLDEN, Stanford, Hythe, December, 1871.

Note on habitat of Atomaria fimetarii.—The name of the fungus in which I found this species (see p. 160 of the present vol.) is *Coprinus comatus*. It is generally distributed, but found most plentifully in burying grounds, growing in abundance in those of Chelsea Hospital; and should be looked for in August and September.—H. HUTCHINSON, 21, St. Anne's Street, Cemetery Road, York.

Instances of the sudden and unaccountable disappearance of particular species of insects.—In the beginning of June, 1867, I found *Gonioctena pallida* here, together with a green larva, which I supposed to be the larva of that insect, abundantly, upon a row of hazel bushes; in the next year the beetle did not appear till October, and I have never found it or its larva again, although I have tried at all times of the year for it during 1869, 1870, and 1871. *Orosodacna cerasi*, also to be found

(although not so abundantly) upon flowers in the neighbourhood of Studley, in 1867, has never once made its appearance since. From dead leaves and decayed sticks not 80 yards from my door, *Agathidium varians* was to be had by *hundreds* in 1867; this insect also I have never found since that year.

I am completely at a loss to know what becomes of a species that is not to be found the year after it has been so abundant; in the case of the *Agathidium*, I am especially foiled, as this insect was so very abundant in 1867; and, although I have hunted for it repeatedly through subsequent years, I have never taken even one example; yet the place where it was originally so common has never been disturbed by anyone but myself, and is, to all appearances, in precisely the same condition as in 1867.—EDWARD A. WATERHOUSE, Fountains, Ripon, Jan. 9th, 1872.

Notes on Argynnis Adippe and A. Niobe.—In answer to Mr. Doubleday's note in the last number of this Magazine, I need only say that I fear he has given me credit for a marvellous imagination, if he really supposes that I pretend to distinguish *A. Adippe* and *A. Niobe* on the wing; but I think he will himself admit that the two remotest variations of the two forms are readily distinguishable when in the net. Again, as to the occurrence of the two forms in *coitû*, I never supposed it to be a conclusive 'proof' of their identity; but, considering the fact that Freyer bred these insects from the larva for several years, and at the end of his experiments was about as little disposed to consider *A. Adippe* and *A. Niobe* distinct as when he began, and also considering his statement that the relative number of the one form to the other varied considerably in different districts, I think the capture of a pair taken in *coitû* is strong evidence against the distinctness of the two forms.—A. G. BUTLER, British Museum, 1st January, 1872.

How many times does the larva of Arctia caja change its skin?—Newport (Article 'Entomology' in Todd's 'Encyclopædia of Anatomy and Physiology,' p. 875) quotes Kirby and Spence as authority for the statement that *Arctia caja* moults *ten times*. Is this a fact? If not, I should like to know how many times it *does* moult.—A. S. PACKARD, JUN., Salem, Massachusetts, December 22nd, 1871.

Notes on the habits of Liparis salicis.—In July, 1870, the poplar trees in Sheerness Dockyard were almost stripped of their leaves by the larvæ of this species, and towards the end of the month thousands of the pupæ might be observed between partially eaten leaves, attached to the trunks of the trees, to palings under copings, and in fact almost anywhere, sometimes in clusters of a dozen or more together. The perfect insects began to appear the first week in August, and by the middle of that month were out in prodigious numbers. They commenced to fly just before dusk, and during the time they were most plentiful, especially if it happened to be a close damp evening, they came forth in great strength and swarmed round the trees. At times it was quite bewildering to look at them, they were in such quantities. Towards the end of the month, white patches of eggs were to be seen on the trees, sometimes high up on the branches; but the parent moth was not particularly careful for the future prosperity of her offspring, as she frequently deposited her eggs on walls, doors, buildings, &c., far away from

any tree, and where the young, as a matter of course, would perish for want of food. The larvæ emerge in about fourteen days, feed for a short while, and then retire under loose bark, &c., where they spin tiny white cocoons in which to pass the winter. These cocoons are not easily found, as, besides being of small size, they soon assume the colour of the bark. About the end of April the young larvæ commence to feed again, and may then be observed, on any warm day, stretched at full length on the trunks of the trees and on the lower branches. They are grimy little fellows when small, and difficult to detect; but, when full-grown, are nearly the most conspicuous larvæ we have. They appear to be almost exempt from the attacks of ichneumons, as I can only remember one instance of those parasites in a larva; and birds apparently will not eat them. On one occasion I presented one to a tame starling; the bird inspected it for a moment or two as it crawled on the floor, as if he could not exactly make up his mind whether it were fit to eat or not; then, no doubt fancying that a creature adorned with such brilliant colours would make an exceptionally dainty dish, he seized and gave it a good shaking (as all birds do when they pick up a caterpillar), but, instead of swallowing it, he jerked it from him to a considerable distance with unmistakeable signs of disgust, and would never afterwards touch one; he treated the larvæ of *neustria*, *auriflua* and *chrysorrhæa* in the same scornful manner. I do not know whether it has been noticed before, but I observed that the larvæ of *salicis* spun cocoons in which to undergo their changes of skin up to the fourth change, but not beyond that.—GERVASE F. MATHEW, Admiralty House, Devonport, 16th December, 1871.

Natural history of Apamea unanimitis.—On the 1st of March, 1868, I found from grass a larva unknown to me at that time, which I figured, and on the 3rd it spun up; the moth appeared on the 5th of June following, and proved to be of this species. On my comparing my figure of this larva with that of *unanimitis* by Hübner, the difference between them was so great as to lead me to suppose mine could not be a typical representative of the species, and I resolved to wait till more larvæ could be found, either to prove or disprove the correctness of my supposition before offering any description for publication. But I can now say, after having had examples of the larvæ from Norfolk, Devonshire, and Hampshire, which differed in no way from the one above mentioned, that I have no doubt of this, which I am about to describe, being the typical form of the larva, at least in this country.

Unfortunately, I can say but little of the egg-state, and nothing of the juvenile larva; for though some years ago I imprisoned a female moth in a pot with growing *Aira flexuosa* covered with lino, the eggs she deposited were allowed to hatch, and the young larvæ to escape during my absence from home: I had, however, previously noted that the eggs were of a pale drab colour, and were all adhering to the blades or leaves of the fine grass about four or five inches from the soil.

Besides *Triticum repens* and other grasses, this larva seems partial to a variety of *Phalaris*, the striped ribband grass of gardens. On the approach of cold weather it seeks a hybernaculum often in the loose grassy sods at the foot of a tree, particularly affecting decayed willows, and occasionally under the bark, and sometimes within the tree itself, amongst the rotten dust. At the end of February or beginning of March it wakes up, but not to feed again, and after crawling about for a few nights, finds a suitable place for pupation. Some of the larvæ I had in captivity

spun amongst the roots of grass, and others in loose, light soil, and the perfect insects came forth from the 27th to the 30th of May, 1871. Before proceeding with my description, I desire to offer my thanks to the Rev. Henry Williams and to Mr. H. D'Orville, for their valuable assistance in supplying larvæ both in spring and autumn.

In October, the full-grown larva measures from $1\frac{1}{2}$ to $1\frac{1}{4}$ inch in length when stretched out, but often contracts itself to 1 inch; it is cylindrical, of about uniform moderate stoutness, tapering very slightly just at each end, the head being a trifle the smallest of the segments, and the anal segment rounded at the tip; the smooth head and plate on the second segment are highly lustrous, and the skin on all the rest of the body is glossy, but, from being covered with multitudes of minute wrinkles, it has no very great play of light on its surface; there are also three deeper sub-dividing transverse wrinkles across each segment. The whole colouring consists in lighter and darker tints of a reddish-brown inclining to ochreous; the ground colour of the back and side is not very deep in tint, and is much like that of some of the *Leucanidæ*; the dorsal stripe begins on the deeper brown plate of the second segment, where it is but a mere line, on the third and fourth it grows wider, and from thence is of about equal width to near the anal tip, being very much paler than the ground, indeed, almost whitish-ochreous, it is very finely edged with darker brown, and on each segment passes through a narrow elliptically-shaped mark of darker brown than the ground colour, composed of freckles; the sub-dorsal stripe is of similar width, but is very little paler than the ground colour, though very well defined by its having darker edges; below again, after an interval of the ground colour, which terminates in a dark edging, comes the spiracular stripe broader than either of the others, of about the same depth of tint as the sub-dorsal stripe, and defined by a paler edging above and below; about the middle of this broad stripe, runs the row of brown spiracles, each delicately outlined with almost black, and surrounded with a small pale halo; the belly and legs are of a slightly deeper tint than the spiracular stripe, and are faintly freckled with a still paler tint; the ventral legs are all tipped with deep brown, the anterior legs spotted with brown; the usual two pairs of tubercular dots on the back of each segment are deep brown, as are also the pair on the side situated above and behind each spiracle, each dot being furnished with a fine brown hair; the head is brown, and very dark brown round the mouth. In March, after hybernation, the larva is generally of darker hue, the whole colouring being of deeper brown, with scarcely any trace of ochreous in its composition, but this is the only change, as all its details remain relatively the same.

The cocoon is made of pale grey glassy-looking silk, compact and smooth of texture, firmly adherent to the substances around it, broadly oval in form, and little more than half-an-inch in length; the pupa is half-an-inch long, of moderate stoutness, smooth, dark reddish-brown in colour, and very highly polished.—W. BUCKLER, Emsworth, November, 1871.

Description of the larva of Tephrosia crepuscularia.—On the 2nd of June last, I received from my friend, Mr. J. P. Barrett, of Peckham, several larvæ of this species, which, being full-grown, I described as follows. Moderately stout, length about an inch-and-a-quarter. Head flattened and notched on the crown, the same

width as the second, but very much narrower than the third segment, which is swollen laterally, forming a prominent hump on each side; the remaining segments are uniform, and of about equal width until the 12th is reached, where there is a slight lateral dorsal ridge. Skin rather wrinkled, puckered along the sides. The third pair of legs appear longer than the others, caused by the 4th segment being swollen ventrally.

Ground colour stone-grey; in some specimens very distinctly variegated with reddish-ochreous, whilst in others a dull dirty black prevails. In the grey variety, which I will call var. 1, the head is stone-grey, marbled with different shades of brown; the medio-dorsal stripe is dull dirty green, interrupted on several of the segments; to the 5th segment the sub-dorsal lines are dark sienna brown, with a fine rust-coloured centre; at this segment they are interrupted, but continued without the rust-coloured centre, at the middle of the 6th, until the 11th, when they turn downwards towards the front prolegs, forming an angle enclosing a pale yellow mark; they are seen again as a short, oblique, dark sienna brown streak on each side the ridge on the 12th segment; on the 6th segment the sub-dorsal lines also pass obliquely upward, meeting in the centre, and forming a conspicuous V-shaped mark, the apex being pointed anteriorly; there are no perceptible spiracular lines, that region being variegated with smoke colour. The general colour of the belly is dull-yellow, thickly clouded with smoke colour, the space between the two pairs of prolegs being grey. The spiracles are small, brown with pale centres. Var. 2, the form variegated with reddish-ochreous, has the head reddish-brown, marbled with darker brown, and a black V-shaped mark, the apex of which is pointed towards, and close to, the notch in the crown; the medio-dorsal line the same as in var. 1, as are also the sub-dorsal lines, but the pale mark on each side of the 11th segment, above, and slightly in advance of the anterior pair of prolegs is lemon-yellow, much brighter than in var. 1. The ventral surface as in var. 1, but having the characteristic reddish-ochreous variegations. Var. 3, the smoke-coloured variety, is the darkest form I have seen. The head is grey, marbled with smoke-colour, and this smoke-colour also prevails on the dorsal surface of the body. Singularly, the pale mark above the anterior part of prolegs is paler than in either of the other varieties, being nearly white.

The larvæ seem partial to oak, and when at rest, grasp the stem with the claspers, stretching out at full length, with the anterior part raised. The two anterior pairs of legs are tucked in, whilst the ventral humps render the third pair very prominent. All the legs are slightly bent inwards.

At the time these larvæ were changing to pupæ, I was taking the perfect insect of the closely allied *biundularia* at large.—Geo. T. PORRITT, Huddersfield, January 8th, 1872.

Tinea pallescentella bred from a dead cat at South Shields.—On the 15th July last, I observed a dead and desiccated cat lying beneath some old gas-pipes, and, on examining it closely, found it to contain both larvæ and pupæ which have produced *Tinea pallescentella* and *T. rusticella*, the latter the more abundantly. The former, though not so common, has appeared in greater or less numbers every month since July, and it is still coming out, for I took five specimens on the 14th of the present month, and two on the 15th, and I doubt not but that it will appear

so long as the weather remains open. There seems to be a constant succession of broods—larvæ, pupæ, and imago occurring at the same time. At present, the larvæ are devouring the internal parts of the animal.—C. Eales, Grace Street, South Shields, 19th December, 1871.

Note on Incurvaria canariella (E. A. 1872, p. 122).—Mr. Hodgkinson is of opinion that this is the same insect as that which he sent me in 1859, and which I then pronounced to be *Incurvaria tenuicornis*. Now, *I. tenuicornis* is an insect which I never possessed, the description in the 'Insecta Britannica' being made from two specimens in the collections of Mr. Edwin Shepherd and Mr. Henry Tompkins; but I think in 1859 I could hardly have named as *I. tenuicornis* so blunt-winged an insect as *I. canariella*, as the very bluntness of the wings struck me directly the Rev. R. P. Murray sent me his Manx specimens last summer. Possibly, Mr. Hodgkinson may have had the real *I. tenuicornis* in 1859, and afterwards meeting with *I. canariella* assumed it to be the same species, as already suggested by me in the Ent. Annual. It "was at first supposed by its captor to be *tenuicornis*, Sta., and may perhaps have been previously overlooked by collectors under the idea that it was that species."—H. T. STANTON, Mountsfield, Lewisham, S.E., January 8th, 1872.

Captures of Lepidoptera in Morayshire.—The last season for collecting has been the very worst I have experienced since my residence in Morayshire. Owing, moreover, to an unfortunate accident in the month of May, I have been prevented from doing much at sugaring.

Still the record of a few species may be of interest for comparison with what has been done elsewhere.

During the whole season, instead of hundreds of moths on the trees, the result has been not one tenth part of the usual number.

Agrotis præcox.—On the 22nd May I dug up 120 larvæ, nearly full fed, on the Culbin sands. A month later I visited the locality again, going to certain marked places (small hillocks covered with the food plant, *Salix repens*) which had swarmed with larvæ before; and, although I dug down to two feet in the sand, failed in finding a single pupa. I bred a fine series of this moth from larvæ obtained in May. The larvæ eat any kind of willow.

Agrotis agathina.—The larvæ swarm on the Califer Hill towards the end of May, and in August the moths were flying very abundantly about among the heather.

A. valligera.—Took a full-grown larva amongst those of *præcox* on the 22nd May. The moth afterwards only occurred sparingly at sugar.

G. libatrix.—26th May, took one specimen at sugar: new to the locality.

C. umbratica.—Very abundant in June, resting on palings.

P. v-aureum.—14th June, on *Lychnis vespertina*. June 28th, *A. corticea*, at rest. Very rare this season. *A. pyrophila*, at rest in the house. I took a full series of this moth afterwards, all, however within doors. I generally visited the various rooms and out-buildings just after dark and took the moths fluttering on the inside of the glass windows. This propensity to fly into buildings I have noticed during previous years, but not to the same extent as this year. I never took the moth out of doors but once, and that was beaten out of the "bents" on

the Culbin sands. These particulars are given in order that others may be on the look out for the insect next year, where it occurs. Little is known of the economy of this local species. In vain I tried to get eggs.

July 8th.—*A. urticae* at flowers of *Silene inflata*.—July 12th, *N. confusa*, at rest: common afterwards at sugar.—14th, *T. batis*, sugar. 18th, *C. flavicornis*, larvae abundant on birch.—27th, *A. tritici*, bred from pupæ dug up in the garden. I obtained many fine forms of this pretty insect, which varies more than usual in this locality.

August 8th, *C. graminis*, very abundant at ragwort, and larger than usual, this year.—8th. My friend, N. F. Dobrée, took *P. bractea* over flowers of *Centaurea nigra*. More specimens were afterwards obtained in this same place. The larvae probably feed on *Ononis arvensis*, which grows in profusion close by.—9th. The first *N. depuncta* at sugar. At rest, too common afterwards.—14th. Took *A. cursoria*, Culbin Sands.—17th. Took at rest the first specimen of the dark variety of *T. orbona*, also the first *Stilbia anomala*. At sugar, *N. Dahlii* and *neglecta* and *E. nigra*; all common afterwards at sugar.—25th. *E. luteola*, at sugar.

September 9th. *C. vetusta* and *exoleta* at sugar: afterwards swarming at the like bait.

October 12th. Pupæ of *T. piniperda* in the pine woods. The white stigma plainly visible through the shell.—GEO. NORMAN, Cluny Hill, Forres, N. B., December 15th, 1871.

Captures of *Lepidoptera* near Battle, Sussex.—February 27th, *C. flavicornis* bred from pupa.—26th, *H. leucophaea* on trunks.

March 2nd, *C. flavicornis* flying round birches.—12th, *B. parthenias* commonly.—17th, *B. notha* one.—19th, *A. prodromaria* one, at light.

April 7th, *V. polychloros*, hibernated.

May 20th, *P. lacertula*, *P. falcata*, one of each at dusk.

June 1st, *M. hastata*, one by beating.—4th, *E. advenaria*, *B. consortaria*, *S. extersaria*, one of each.—10th, *A. subsericeata*, *P. falcata*, *C. fluctuosa* (2), *S. extersaria*, *N. camelina*, at dusk. *H. prasinana*, one at sugar.—11th, *Z. trifolii* commonly. *Thecla quercus*, a larva found.—16th, *B. lancealis*, *A. sylvata*, *C. fluctuosa* (4), at dusk.—17th, *B. lancealis*, *A. sylvata*, *Eup. nanata*, at dusk.—30th, *S. undulata*.

July 1st, *G. papilionaria*, *M. notata*, *M. albicillata*, singly at dusk. *A. tinctoria*, *A. herbida*, one each at sugar.—8th, *C. miniata*, *N. fuscata*, *P. bajularia*, *E. heparata*, one each at dusk. *D. Orion*, *C. or*, one each at sugar.—15th, *M. unangulata*, *S. undulata*, *H. derivalis*, at dusk. *C. or*, one at sugar.—17th, *V. polychloros*, 2 bred.—22nd, *T. fimbria*, *A. advena*, at sugar.—29th, *G. papilionaria* at dusk. *A. ligustri* at sugar.

August 6th, *V. polychloros* flying.—28th, *C. nupta*, commoner than usual, this year.—30th, *C. Edusa* seen.

November 11th, *X. rhizolitha* at sugar. *G. rhamni* on a bush.—J. H. A. JENNER, Lewes, January 13th, 1872.

Additions to the list of *Manx Lepidoptera*.—Among the insects which I have taken this year in the Isle of Man, are single specimens of *Dasypolia templi* (♂) and *Agrotis pyrophila*. These are good additions to our local list. The only other *Noctua* added by me to it during the same period is *Cerigo cytheræa*.—R. P. MURRAY, Mount Murray, Isle of Man, 30th December, 1871.

Review.

A CATALOGUE OF BRITISH HYMENOPTERA ACULEATA, compiled by FREDERICK SMITH, Assistant in the Zoological Department of the British Museum. Published by the Entomological Society of London.

“*Irritabis crabrones*.”—Plant., Amph. 542.

In 1829, James Francis Stephens produced his “Systematic Catalogue,” and was able, within the limits of a moderately-sized volume, to present a conspectus of all the insects then known to inhabit Britain. The progress of Entomology, however, during the last 40 years has been such, and the number of species described has multiplied so rapidly, that no Entomologist of the present day would venture to compile a General Catalogue of our native insects; and, in truth, those who study British insects as a whole, or do more than devote themselves to a single Order, or even a small fragment of an Order, may well be counted on the fingers. When, therefore, some four years ago, the preparation of a List of British Insects was undertaken by the Entomological Society, it was felt that the combined labour of numerous persons was necessary to accomplish such a work, whilst financial considerations rendered it compulsory that the publication should be spread over a considerable time. It was therefore resolved that the different Orders should be issued separately, but as nearly as might be on a uniform plan, so as ultimately to form a homogeneous whole.

The first instalment, containing the Order Neuroptera in the Linnean sense, in which 323 species are enumerated, appeared in May, 1870. The second instalment, issued in November last, contains the Aculeate Hymenoptera, and of these 378 species are indicated as indigenous. For years past, Mr. Fredk. Smith has been known as our chief worker among ants and bees; and the mention of his name as the compiler will be sufficient, without any formal eulogium, to satisfy all that the preparation of this List could not have been entrusted to more competent hands.

It is easy to raise a laugh at the expense of the man who spends time and labour in poring over old and vague descriptions to unravel complications of synonymy, and in the end produces what, to the uninitiated, appears a chaos of confusion, as unintelligible as a cuneiform inscription. But, so far from deriding the compiler as a drudge whose work can be performed by any patient animal, I maintain that, to compile a Catalogue as it ought to be compiled, the very best man is required—and (as Job’s comforter, I may add) the better he does it, the sooner will his work become obsolete. For, though these Catalogues have an enduring value, as permanent records of the state of knowledge at the particular time, their chief importance consists in the impetus which they undoubtedly give to the study of the particular group; and the greater the impetus, the more rapid is their supersession.*

Mr. Smith sub-divides the Aculeata into four groups; *Heterogyna*, containing 4 families, 12 genera, and 35 species; *Fossores* (? *Fossoria*), containing 8 families,

* Mr. Smith has already rendered this Catalogue incomplete, by describing two new species of bees, *Prosopis rupestris* (Ent. Ann. 1872, p. 103), and *Andrena pratensis* (lib. cit. p. 106). The latter, however, is only doubtfully distinct from *A. pilipes*, with which it was taken in company; surely it would have been better to await the capture of at least a second specimen, before naming it “provisionally.”—J. W. D.

34 genera, and 119 species; *Diptoptera*, containing 2 families, 3 genera, and 20 species; and *Anthophila*, containing 2 families, 26 genera, and 204 species. Roughly and popularly speaking, these sub-divisions may be taken to represent *Ants*, *Sand-wasps*, *Wasps*, and *Bees*.

A review of a work on *Aculeata* will naturally be expected to contain some stinging criticisms; but in this respect my readers will scarcely be gratified. I would not willingly tread in a hornet's nest. And, in truth, as regards the Entomology of the group, Mr. Smith's habit of keen observation and familiarity with the insects themselves, his knowledge of the literature of the subject, his power of detecting affinities, and his faculty for the discrimination of species, place him far above my criticism. My remarks will therefore be addressed principally to points of detail in the arrangement of the Catalogue; in other words, it is the Cataloguer, not the Entomologist, that I arraign; and the points to which I shall refer will be chiefly such as have a bearing upon the future parts of the undertaking.

I will first notice a few variations in form between the mode of dealing with the *Aculeate Hymenoptera*, and that pursued with the *Neuroptera*. In the *Neuroptera*, Mr. McLachlan, in his citations of authors, always begins with the oldest name of the species, then follows on with the references in chronological order to authors who employ the same generic and specific names, and next with the references in chronological order to authors who employ the same specific but a different generic name; the other specific names which have at various times been given to the insect are then taken up in turn, and each is treated in like manner. Take, *e.g.*, *Sympetrum scoticum*, Cat. Neur. p. 12. The original name given by Donovan was *Libellula scotica*; commencing with this, we have next the references to Selys, Rambur, and Hagen, who all use the same name; then the references to Newman and Evans, who employ the names *Sympetrum scoticum* and *Diplax scotica* respectively. Having thus exhausted all the references under *scotica*, the next oldest name, *Sympetrum basale*, is taken, and this specific name is exhausted in the same manner as the previous one; and so on with the rest.

In the *Aculeata*, Mr. Smith has proceeded upon a different plan; take, for instance, *Sapyga clavicornis*, p. 5. Beginning with *Apis clavicornis*, we pass at once to the synonyms *Scolia prisma* and *Masaris crabroniformis*, and then return to *Sapyga prisma*, and ultimately to *Sapyga clavicornis*, the binomial appellation by which the insect is now known. Or, take *Ammophila viatica*, p. 9. Beginning with *Spheg viatica*, we go in turn to *S. hirsuta* and *arenaria*, then return to *Ammophila hirsuta*, again return to *Psammophila viatica*, and after this dovous course are finally landed in *Ammophila viatica*. It is manifest that the order of citation is here determined by different considerations from those which governed the order in the Catalogue of *Neuroptera*; Mr. Smith's scheme seems to depend upon generic chronology, while Mr. McLachlan's is based on specific chronology; and as this plan has been followed pretty uniformly (though not universally) throughout the present Catalogue, I presume it has been deliberately adopted as an improvement upon the former plan. The difference between the two (note also the variation in punctuation) will be best seen by placing in juxta-position the entry of the same species as catalogued by Mr. Smith, and as it would have appeared if the citations had been given according to the scheme of the previous Catalogue (No. 1). Thus,

SAPYGA CLAVICORNIS (Mr. Smith).

Apis clavicornis, Lin. S.N. i. 953.
Scolia prisma, Fab. E. S. ii. 236.
Masaris crabroniformis, Panz. F.G. 47, 22, ♀. *Sapyga prisma*, Klug, Mon. Sirio. 63; Lind. Obs. 303; Wesm. Hym. Foss. Belg. 25; St. Farg. Hym. iii. 566.
S. clavicornis, Cur. B. E. xi. pl. 532; Shuck. Foss. Hym.; Smith, Brit. Foss. Hym. 52; Thoms. Opusc. Ent. 210.

SAPYGA CLAVICORNIS (No. 1).

Apis clavicornis, Lin. S.N. i. 953;
Sapyga clavicornis, Cur. B.E. xi. pl. 532; Shuck. Foss. Hym. 45; Smith, Brit. Foss. Hym. 51; Thoms. Opusc. Ent. 210. *Scolia prisma*, Fab. E. S. ii. 236; *Sapyga prisma*, Klug, Mon. Sirio. 63; Lind. Obs. 303; St. Farg. Hym. iii. 566; Wesm. Hym. Foss. Belg. 25. *Masaris crabroniformis*, Panz. F. G. 47, 22, ♀.

My next observation is that Mr. Smith does not always follow the order of time in his citations, even where (so far as I can see) no reason exists for deviating from chronological arrangement. For instance, under *Tetramorium cæspitum* (p. 3), why should Nylander's synonym *Myrmica fuscula* (1846) and Förster's *M. impura* and *modesta* (1850) be cited before Latreille's *M. cæspitum* (1805)? And under *Spilomena troglodytes* (p. 17), why (in deviation from the plan even of generic chronology) should *Stigmus troglodytes*, Lind. (1829), be placed after *Celia troglodytes*, Shuck. (1837)? Under *Nomada germanica* (p. 33), why do *N. ferruginata*, Schæf., Nyland., and Thoms., precede *Apis ferruginata*, Kirby? and under *N. lineola* (p. 34), why is *N. cornigera*, St. Farg. (1839), given precedence over *Apis cornigera*, Kirby (1802)? But still more unaccountable are cases like *Gorytes Fargei* (p. 11), where Shuckard's name (1837) is cited after the later references to the *G. campestris* of St. Fargeau, Dahlbom, Wesmael and Thomson; or like *Melecta armata* and *Stelis aterrima* (p. 35), where Kirby's (1802) rejected names of *punctata* and *punctatissima* (which, by the way, should be *punctulatissima*) are cited at the head of the list, before Panzer's earlier names of *armata* and *aterrima* (1799), which are by virtue of their priority retained for the species respectively.

Again, though this is less important, in citing authors who employ the same generic and specific names, the order of date is not always preserved. Thus, under *Sapyga clavicornis* (*vid. sup.*), in referring to *S. prisma*, St. Fargeau ought to precede Wesmael; under *Apathus campestris* and *Bombus sylvarum* (p. 40), Shuck. Brit. Bees (1866) should precede Thoms. Opusc. Ent. (1869); and throughout the Anthophila, Smith, Bees Gt. Brit. (1855) is very frequently, though not invariably, cited before Nyland. Ap. Bor. (1848). See also *Halictus tumulorum* (p. 24), where references to Smith and Thomson (1869) are placed before Smith (1855), Nylander (1852), and Shuckard (1866).

Not unfrequently, a later name is preferred to an earlier one, without any indication of reason for the rejection of the earlier. For instance, *Nomada armata* (p. 33); Stephens's name *Kirbyi* (1835) is rejected, whilst Schæffer's *armata* (1839) is adopted. So in *Cœlioxys simplex* (p. 35); Kirby's name *conica* is passed over, and the reason is shewn by the words (*nec* Lin.); then follow, as synonyms, *inermis*, Kirby (1802), and *elongata*, (St. Farg. 1841, though Mr. Smith cites only Gerst. 1869), whilst the name adopted is *simplex*, Nylander (1852).

Other instances in which an older name is rejected for a later one, without any reason being indicated, occur in *Priocnemis sepicola*, p. 7, *Gorytes laticinctus*, p. 12, and *Prosopis communis*, p. 23. The first is the *fuscus* of Fabricius, but not of

Linné; the second is the *quadrifasciatus* of Spinola, but not of Fabricius; the third is the *annulata* of Kirby (and indeed of Fabricius, though he is not cited), but not of Linné. In such cases the addition of (*nec* Lin.) or (*nec* Fab.) would have supplied the requisite explanation.

But *Gorytes laticinctus* is the *G. arenarius* of Van der Linden. And although St. Fargeau's name *laticinctus* had an earlier origin than that shewn by Mr. Smith (in the first volume of *Ann. Soc. Ent. Fr.*, 1832), yet the name *arenarius* dates from 1829. Probably *arenarius* had, like *quadrifasciatus*, been anticipated, and all that is required is another (*nec* Lin.) or (*nec* Fab.); though the existence of *Sphex arenaria*, Lin., which before Van der Linden's day had been allocated to the genus *Cerceris*, is not a sufficient ground for rejecting a *Gorytes arenarius*. Or it may be that Mr. Smith declines to depose the name *laticinctus*, which is in use, for *arenarius*, which has never attained currency. But even the principle of "communis error" does not explain the adoption of the name *Crabro luteipalpis*, p. 13; as in the last case, St. Fargeau's *luteipalpis* is posterior to Van der Linden's *elongatulus*, and the latter, besides its priority, has the balance of usage in its favour, and is employed by Shuckard, Dahlbom, Wesmael, and Thomson.

There is another class of cases in which Mr. Smith has apparently, though not in reality, set the law of priority at defiance. Take e. g. *Prionemis exaltatus*, p. 7. The earliest authority cited for the specific name is Fab. E. S. ii. 251, which is posterior to Schrank's name *albomaculata* (1781); but, in truth, the species was first described as *Sphex exaltata* by Fabricius, in S. E. 351 (1775). So also with *Crabro varius*, *bimaculatus*, and *pallidipalpis* (p. 14); if the references given to St. Fargeau were the earliest, those names would be posterior to the *C. spinipectus*, *geniculatus*, and *propinquus* of Shuckard; but St. Fargeau's original descriptions in the *Ann. Soc. Fr.* date from 1834, and thus preceded Shuckard (1837).

This brings me to the remark that in every case the oldest authority for a name ought to have been given—followed, of course, by references to the later works of the same author or of other authors, when necessary. I am not one of those who admit any quasi-proprietary right of the nomenclator in the species he describes. The name of an insect is a thing absolute, quite independent of the name-giver, and I care not a straw whether it was given by Linné or Fabricius, by Latreille or Kirby. The name of the hive-bee is *Apis mellifica*, not "*Apis mellifica*, Lin.," and (except when required for some definite purpose, as e. g. to remove an ambiguity, and distinguish between the thing which Linné calls *Apis muscorum* and the other thing which Kirby called by the same name) I hold the practice of tacking on the nomenclator's name as a modern custom more honoured in the breach than the observance. I have no respect for a nomenclator, simply as such; the fact that he has been the first to name and describe an insect or a plant gives him, in my eyes, no title to immortality, does not even invest him with the faintest halo of sanctity. I use the name he has given, not as a recognition of any merit in him, or as an admission of any right in him, but solely from considerations extraneous to him. The rule of priority in nomenclature, I hold to be a good rule, within its proper limits; it is not an unmixed good: and priority, like any other hobby-horse, may be ridden too hard. When the rule is strained beyond the reason for the rule, it becomes a nuisance—nay more, it produces intolerable evil; but when reasonably applied, it produces more convenience than inconvenience. I accept it,

therefore, as a rule of convenience, and nothing more; a rule adopted for the benefit of science, not for the glorification of name-givers. And the sooner the better, that we are well rid of any such notion as that the law of priority is established *in piam memoriam fundatoris*, or that there is any "divine right" of the nomenclator.

But, quite irrespective of any question of priority between different authors, I think that the first description of each species should have been cited throughout this Catalogue. Thus, under *Ceropales variegata* (p. 8), the first reference should have been *Evania variegata*, Fab. E. S. Supp. 241, not *C. variegata*, Latr.; under *Cemonus unicolor* (p. 18), the first reference should have been *Pemphredon unicolor*, Latr. Gen. Crust. et Ins. iv. 84, not Lind. Obs. 83; and under *Mimesa equestris* (p. 19), the first reference should have been *Trypoxylon equestre*, Fab. Piez. 182, and not *Psen equestris*, Lind. Obs. 107. By the way, is not this species the *Psen rufa* of Panzer? so that, but for Fabricius, it would be now called *Mimesa rufa*, and not *equestris*. So also, under *Vespa arborea* (p. 22), the first reference should have been *Vespa borealis*, Smith, Zool. 1843, p. 170 (*nec* Kirby). And are not *Halictus rubicundus* (p. 24) and *Andrena nitida* (p. 27) the *Apis rubicunda* of Christ and the *Apis nitida* of Fourcroy, each of whom was anterior to Kirby? and is not *Bombus senilis* (p. 40) the *Apis senilis* of Fabricius? whom may Smith long survive!

Mr. Smith occasionally cites the names of the Fauna Suecica, ed. 2, so that he is not one of those who think that scientific nomenclature ought to begin with the 12th ed. of the *Systema Naturæ*, though most of his citations of Linné are from the last mentioned work, even when the same species is described in the Faun. Suec. So again, the bulk of his references to Fabricius are to the *Entomologia Systematica* or the *Systema Piezatorum*, though many of the species are given in the *Systema Entomologiæ* (1775); indeed, the last mentioned work is so seldom cited that, like the *opus posthumum* of John Ray, it has escaped notice in the introductory List of Abbreviations. We have already seen that many of St. Fargeau's descriptions date from a period anterior to that shewn in the Catalogue. And, lastly, there are species described by Mr. Smith himself, most of which happily have no synonyms, or, at all events, are not yet known to have any, and for which he has been content to refer only to Bees Gt. Brit. (1855); yet many of these were described years before, as e. g., *Prosopis cornuta* and *punctulatissima* (p. 23), under the names of *Hylæus cornutus* and *punctulatissimus*, Tr. Ent. Soc. iv. 32, 33 (1845), *Halictus maculatus*, *gramineus*, *zonulus*, *longulus*, and *prasinus*, *Andrena decorata*, *ferox* (misprinted *Apis ferox*, p. 27), *vitrea* (the ♂ for the first time described in Ent. Ann. 1872, p. 105), *similis*, *fucata*, *constricta*, *frontalis*, *aprilina*, *extricata*, *polita*, *fulvescens*, *longipes*, and *argentata*, *Nomada baccata* and *rubra*, *Stelis 8-maculata* (now figured, Ent. Ann. 1872, f. 3), *Celiowys umbrina*, *Megachile versicolor* and *odontura*, and *Osmia pilicornis*, all of which were originally characterized in The Zoologist, between 1844 and 1849.

Whilst dealing with dates, I may remark that a fatality appears to have attended the few references in the Society's Catalogue to the Society's Transactions. The date of "Smith, Brit. Form." is stated (p. vii) to be 1854 instead of 1855, and in the only citation from this paper, *Tapinoma erraticum* (p. 2), the page is wrongly given. The date of the generic name *Spilomena* (p. 17) is given 1840 instead of 1837, and the reference to Tr. Ent. Soc. ii. 79 for the species *S. troglodytes* is inserted altogether by mistake.

I have now come to the end of my remarks which turn on questions of chronology or priority; and I proceed to enter a protest against a mode of citation which Mr. Smith has in some cases adopted. When papers are published in the Transactions of a Society, or a periodical, the reference should be given to the volume of the Transactions, or to the periodical by its title, not simply to the title of the paper. In the case of some papers of Nylander's, published by the Academy of Sciences of Helsingfors, a paper of Schenck's, published by the Natural History Society of Nassau, the above-mentioned paper of Smith's published by the Entomological Society of London (only once cited in the Catalogue), and a paper (of only 8 pages, twice cited) of Wesmael's published by the Academy of Sciences of Brussels, Mr. Smith has referred to the title of the papers themselves, thus "Nyland. Mon. Form.," "Nyland. Ap. Bor.," and not to the works in which they appeared. These papers were never separately published as independent works, and I see no reason why they should have been cited in a different way from the numerous other papers—published (say) in the Trans. Lin. Soc. Lond., the Ann. Soc. Ent. Fr., or the Stett. Ent. Zeit.—to which Mr. Smith makes reference. Schenck's Nass. Bien. was originally published in the Jahrb. Ver. Nass. in 1859, and was also published as a separate work in 1861; but even in this case it would have been better to cite the earlier print rather than the later reprint. I may add that two supplements to "Nass. Bien." have appeared in the Jahrbücher for 1863 and 1869, but to neither of these, nor to the papers on Bees by the same author in Stett. Zeit. 1870, does Mr. Smith refer, though the conclusions arrived at by Schenck are in some respects at variance with those of the Cataloguer.

No author is cited by Mr. Smith so frequently as Nylander: to "Ap. Bor." "Ap. Bor. Supp." and "Ap. Bor. Revis." alone there are more than 120 references; and when we turn to the list of Abbreviations (p. vi.) to learn where and when these works appeared, we are informed that they, as well as the "Mon. Form." and "Mon. Form. Addit.," are published in the Acta Soc. Sci. Fennicæ. It is true the "Mon. Form." and its supplements (for there are two) are published in the Acta; the "Ap. Bor." and its two supplements however are not in the Acta at all, but in a "Bihang till Acta" entitled "Notiser ur Sällskapets pro Fauna et Flora Fennica Förhandlingar." As these Helsingfors publications are little known in this country, it may be serviceable to add the following particulars concerning them. The publication of the Acta commenced in 1840; and the two first volumes (1840-47) contain half-a-dozen Entomological papers by Sahlberg and Mannerheim; in the 3rd fasciculus (1846) of the 2nd volume will be found Nylander's Adnotationes in Monographiam Formicarum borealium Europæ (which was read before the Society on the 9th February, 1846), and also the Additamentum Adnotationum &c. (which was read on the 9th November, 1846). In the 3rd vol. of the Acta (1852, on the title page) will be found an Additamentum alterum Adnotationum &c. (said to have been read on the 1st November, 1846, but this must be a misprint, probably for 1849). About 1817 it seems to have been thought that it was desirable to separate the zoological and botanical papers from the rest, and accordingly the "Notiser" were started for their reception. As however Nylander's Mon. Form. and the Addit. had appeared in the Acta, on this account (I presume) the Addit. alterum was inserted in the Acta; but, with this exception, there is no zoology in the Acta of later date than 1846. The Notiser were at first published

in 4to, uniform with the Acta, and vols. 1, 2, 3, of the Notiser may in some sense be regarded as appendices to vols. 2, 3, 4, of the Acta. But on the completion of vol. 8 of the Notiser, the 4to. was abandoned, an 8vo. series was begun, and vol. 11 (or vol. 8 of the new series), dated 1871, is now before me.* I hope that a complete set of the Notiser will shortly be in the Entomological Society's library, and thereby render accessible to our members the papers, not only of Nylander, but of Tengström, Sahlberg, and Reuter.

To revert more particularly to Nylander's papers on Aculeate Hymenoptera. Vol. i. of the Notiser contains "Mutillidæ, Scoliidæ et Sapygidæ boreales," read 12th April, 1847; "Strödda Anteckningar" (including some notes on Ants), read 17th May, 1847; and the "Adnot. in expos. monogr. Apum borealium," read 6th December, 1847. Vol. ii. of the Notiser contains "Supplementum Adnot. in exp. mon. Apum bor.," read 18th November, 1850, and the "Revisio Synoptica Apum borealium," read 8th December, 1851. As there are some errors in Hagen's Bibliotheca Entomologica respecting these papers, it may be worth while to add the following:

NYLANDER (William); of Helsingfors, in Finland.

1. Adnotationes in Monographiam Formicarum borealium Europæ.
Acta Soc. Sci. Fennicæ, ii. 875—944. (Helsingfors, 1846).
2. Additamentum ad Adn. in. Mon. Form. bor. Europæ.
Acta Soc. Sci. Fenn. ii. 1041—1062. (1846).
3. Additamentum alterum ad Adn. in Mon. Form. bor. Europæ.
Acta Soc. Sci. Fenn. iii. 25—48. (1849).
4. Mutillidæ, Scoliidæ, et Sapygidæ boreales.
Notiser ur Sällskapet pro Fauna et Flora Fennica Förhandlingar, i. 7—30. (1848).
5. Strödda Anteckningar.
Notiser &c., i. 289—304. (1848).
6. Adnotationes in expositionem monographicam Apum borealium.
Notiser &c., i. 165—282. (1848).
7. Supplementum Adnotationum in exp. monogr. Apum borealium.
Notiser &c., ii. 93—107. (1852).
8. Revisio Synoptica Apum borealium, comparatis speciebus Europæ mediæ.
Notiser &c., ii. 225—286. (1852).

With the exception of No. 5, Mr. Smith refers to all these papers, though apparently without knowing that he was citing two of them. For, the references to *Formica glabrella* (p. 2), *Myrmica lippula* (p. 3), *M. unifasciata* and *flavidula*, and *Myrmecina striatula* (p. 4), should all be to "Mon. Form. Addit. alterum" that is to "Acta Fenn. vol. iii," the pages being correctly given, except *Myrmica flavidula*, which is iii. 43 (not 33). And the references for *Tiphia femorata* (p. 5) should be "Mutill. Scol. &c., bor.," that is "Notiser Fenn. i. 21," and for *T. minuta*, "Notiser Fenn. i. 24."

It was the last two references to Nylander which led me to test Mr. Smith's

* In the Zool. Record for 1870, Mr. W. F. Kirby has referred to the 10th vol. (i.e. the 7th of the new series, which properly belonged to the Record for 1869) under the abbreviation "Fauna et Flora Fenn. Förh.," but at p. 409, *Caradrina cinerascens*, the vol. is erroneously given as xi. instead of x; and at p. 420, *Tortrix lapponana*, the page is given 310 instead of 359.—J. W. D.

quotations by an examination of the original volumes. It struck me as curious that the *Scoliidae* should be included in a monograph of *Apidae*, and as still more curious, when, on referring to the Museum "Catalogue of British Fossorial Hymenoptera, Formicidae and Vespidae," I found that, throughout the *Mutillidae*, *Scoliidae* (or *Scoliidae* as they are there called), and *Sapygidae*, the citations of Nylander are uniformly "Ap. Boreal." When I find in the British Museum Catalogue "*Tiphia femorata*, Nyland. Ap. Boreal. 19, 1", and in the Entomological Society's Catalogue "*Tiphia femorata*, Nyl. Ap. Bor. 19", whilst the true reference is "*Tiphia femorata*, Nyl. Scol. Bor. 21"; and when I find "*Osmia xanthomelana*, Nyland. Ap. Boreal. Suppl. p. 270, 5" re-appear as "Nyland. Ap. Bor. Suppl. 270," whilst the true reference is "Nyland. Ap. Bor. Revis. 270", I am afraid the conclusion is irresistible that the citations of 1871 have been copied from those of 1858 and 1855 without verification by inspection of the original papers. I subjoin the references to Nylander's paper for our eight British species belonging to the three families *Mutillidae*, *Scoliidae* and *Sapygidae*.

MUTILLIDÆ. *Mutilla europæa*, Nyl. Not. Fenn. i. 8.

„ *ephippium*, Nyl. Not. Fenn. i. 13.

Myrmosa melanocephala, Nyl. Not. Fenn. i. 16.

Methoca ichneumonides, Nyl. Not. Fenn. i. 19.

SCOLIIDÆ. *Tiphia femorata*, Nyl. Not. Fenn. i. 21.

„ *minuta*, Nyl. Not. Fenn. i. 24.

SAPYGIDÆ. *Sapyga punctata*, Nyl. Not. Fenn. i. 25.

„ *clavicornis*, Nyl. Not. Fenn. i. 27.

To pass on to the Bees, it is perhaps scarcely surprising that confusion should arise between "Ap. Bor.," "Ap. Bor. Suppl.," and "Ap. Bor. Revis." The following may be adduced as examples, and a dozen others might be added :

p. 24. *Sphecodes Geoffroyellus*, Ap. Bor. Revis. 194 should be *S. Geoffrellus*, Ap. Bor. 194.

36. *Megachile Leachella*, Ap. Bor. 276 „ Ap. Bor. Revis. 276.

„ *circumcincta*, Ap. Bor. 103 „ Ap. Bor. Suppl. 103.

38. *Osmia xanthomelana*, Ap. Bor. Suppl. 270 „ Ap. Bor. Revis. 270.

Many of the references to "Ap. Bor. Revis." might well have been omitted altogether. The object of the Catalogue, as explained in the Report of the Council (see Proc. Ent. Soc. 1867, p. cxii.), is, by a judicious selection of citations, to refer the student to the best descriptions or figures of each species, and to the authors whose observations have contributed what is known of the habits and economy of the insects. Yet many of the passages in "Ap. Bor. Revis." to which reference is made are mere cursory observations on the species. If any one will refer to the pages cited under any of the following—*Colletes succincta* and *marginata*, *Sphecodes subquadratus*, *Halictus tumulorum*, *cylindricus* and *leucopus*, *Andrena florea*, *nigriceps* and *pubescens*, *Nomada baccata*, *Colioxys rufescens*, *Megachile argentata*, *Chelostoma florisomne*, *Heriades truncorum*, *Osmia rufa* and *fulviventris*, *Bombus terrestris* and *lucorum*—it will be seen in a moment what I mean. The only remark Nylander makes (in the paper cited) about *Colioxys rufescens* is, that it seems to be identical with his *C. apiculata*, and occurs in England and France; of *Andrena nigriceps* we are simply told that *A. fulva* is a synonym; of *A. pubescens*, that *A.*

cincta is identical and occurs in Finland among junipers (neither *fulva* nor *cincta* is included in Mr. Smith's synonymy); and of *Nomada baccata*, all that is to be found at "Ap. Bor. Revis. 281" is a List of Species in which "*N. baccata*, Sm." occurs! These strike me as scarcely favourable specimens of "judicious selection."

Amongst the Aculeata, of all other groups, are found the most remarkable phases of insect development and (I may add) of insect intelligence and civilization. Ants and bees are Anglo-Saxons amongst insects. One would expect then to find in the Catalogue numerous references to accounts of the habits and economy; but I do not see anything to indicate which of the authors cited have worked out the life-histories of species; such guides as (ov.), (larv.), (devel.), (econ.), (anat.), &c., are entirely absent. I fancy indeed that the references of this kind are undesirably few. Réaumur is cited, but rarely; Swammerdam, Huber, and other illustrious names of the present and past generations are conspicuous only by their absence. I rejoice, however, to find that John Ray's account of the honey-bee has not been overpassed; though it might be supposed, from the form of the citation, that "le premier véritable naturaliste du règne animal" had anticipated the Linnean system of nomenclature; lest any one should suggest that for the last century and more the world has been in error, it may be well to observe that Ray's "*Apis domestica*" is no more the scientific name of the hive-bee than is the "*Apis Matina*" of Horace or the "*Apis Cecropia*" of Virgil. But great as is my admiration for Ray, I think some other works might advantageously have been referred to; and I may take this opportunity of calling attention to Bütschli's paper, "Zur Entwicklungsgeschichte der Biene" in the 20th vol. of the Zeitschrift für wissenschaftliche Zoologie, where, to quote the Zoological Record for 1870, "the author enters very minutely into the development of the various internal and external organs of the larva of *Apis mellifica*, from the earliest obtainable embryo." This ought to throw some light upon the endosmosis-theory of Major Munn (see Proc. Ent. Soc. 1870, pp. xxiv.—xxviii.).

The next point is the incompleteness of the synonymy. For instance, are not *Scolia 4-guttata* and *Sirex pacca*, Fab., *Sapyga 4-punctata*, Panz., and *S. varia*, St. Farg., all identical with *Sapyga 5-punctata* (p. 5)? yet none of these are mentioned. Are not *Trypoxylon atratum* and *Pelopæus unicolor*, Fab., *Psen pallipes*, Spin., and *P. serraticornis*, Jur., all synonyms of *Psen ater* (p. 19)? Are not *Crabro variabilis*, Schr., and *Philanthus semicinctus*, Panz., referable to *Cerceris ornata* (p. 20)? Are not *Vespa spinipes*, Oliv., *Pterochilus dentipes* and *tinniens*, Schæf. = *Odynerus melanocephalus* (p. 21)? Are not *Vespa 4-cincta*, Fab., *V. gazella*, Panz., *V. yuncea*, Christ, and *O. tricinctus*, Schæf. = *O. trifasciatus*? Is not *Prosopis atrata*, Fab. = *P. signata* (p. 23)? Are not *Apis rufa*, Christ, and *Melitta picea*, Kirby = *Sphecodes gibbus* (p. 24)? And is not *Andrena 4-punctata*, Fab. = *A. hattorfiana* (p. 26)?

So at least we were told in the British Museum Catalogue! It cannot be that all these determinations of the older authors' species have since been proved incorrect! If not, it follows that the synonyms in the present Catalogue are only a selection from what might have been given.

But to leave the older authors, and come nearer to our own day. Is not *Crabro hyalinus*, Shuck., a synonym of *C. luteipalpis* (p. 13)? Are not *Sphecodes similis* and *piceus*, Wesm. = *S. gibbus* (p. 24)? Are not *Andrena fulva*, *cincta*, and *clypearis*, Nyland., synonyms of *A. nigriceps*, *pubescens*, and *fucata* respectively

(p. 29)? Is not *A. barbatula*, Zett. = *A. albicrus* (p. 30)? and *A. subopaca*, Nyland. = *A. parvula*? Is not *Nomada Marshamella*, Nyland. = *N. Lathburiana* (p. 33)? and *N. neglecta*, Schæf. = *N. Roberjeotiana*? And is not *Megachile fulviventris*, Zett., a synonym of *M. Willughbiella* (p. 36)?

Again, is Thomson wrong when he gives *Crabro affinis*, Wesm., as a synonym of *C. pubescens*? Is Gerstäcker wrong when he gives *Cœliomys fissidens* and *fraterna*, Först., as synonyms of *C. 4-dentata*? and *C. trinaeria* and *diglypha*, Först., as synonyms of *C. rufescens*? And is Schenck wrong when he gives *C. apiculata*, Först. (*nec* Nyland.), and *divergens*, Först., as synonyms of *C. simplex*?

Or to turn to British authors—Why is Moses Harris ignored? What has become of the *Vespa superba*, ætullans, petulans, parietum and vezator of Harris? of the *Apis flavicollis* of Sowerby? of the *Melitta lugubris*, nudiuscula, contigua, and digitalis, of the *Eucera linguaria*, *Apis 6-cincta* and *Leeana*, of Kirby? I find no reference to any of these.

And lastly, what has become of the *Crabro vestitus* and *scutellaris*, *Vespa borealis*, *Hylæus plantaris*, *Sphecodes pellucidus*, *Andrena rubricata*, *distincta*, *atra*, *æstiva*, *apicata*, *lacinia*, *articulata* and *nigrifrons*, *Nomada vidua* and *inquilina*, *Megachile albiventris*, *Osmia hirta*, *Apathus nemorum*, *Bombus montanus*, *monticola* and *flavonigrescens*, of Smith? Here are more than a score of names, each published by Mr. Smith for a British insect—yet in this Catalogue of British Insects not one of them is mentioned! No doubt these names all disappear as synonyms, but surely Mr. Smith should not have consigned them pauper-like to an undistinguished grave, but have given them decent burial, and have indicated the last resting-place of these, his own creations.

If it be said that, by consulting the British Museum Catalogues, the whereabouts of most of them may be discovered, I readily agree. But then we arrive at this dilemma. The synonymy of this Catalogue was either intended to be complete in itself, or it was not; if completeness were the intention, why these omissions? if not, why have done more than simply refer to the prior Catalogues? Why print any synonymy at all, except the corrections of previous errors? In short, it seems to me that of synonymy we have either vastly too much, or somewhat too little.

This seems a fitting place to notice that Costa has recently disputed Smith's conclusions as to the synonymy of certain species of *Cerceris*. According to Costa (*Ann. Mus. Nap.*, vol. 5, published in 1869, but to which no reference is made in the Catalogue), *Philanthus interruptus*, Panz., is distinct from *Cerceris 5-fasciata*;* *P. 5-cinctus*, Panz., is a ♂ var. of *Cerceris arenaria*, and is not attributable to *C. 5-fasciata*; and *P. sabulosus* and *4-cinctus*, Panz., are not the sexes of one species, his *P. sabulosus* belonging in fact to *Cerceris emarginata*.

Some of Mr. Smith's citations of synonymy are erroneous in form. Take e. g. *Odynerus parietum* (p. 21); it would be supposed that Wesmæl, Zetterstedt, St. Fargeau, Saussure, Smith, and Thomson all wrote the specific name *parietinus*, after Curtis. Take again *Halictus santhopus* (p. 25); it would seem as though St. Fargeau, Smith, Nylander, and Shuckard all adopted Curtis's name *Lasioglossum*

* Mr. Smith's references to Rossi are unfortunate. In the Cat. Brit. Foss. Hym. p. 192, we find "*Crabro 5-fasciatus*, Rossi, Faun. Etrus. Mant. 1. 139, 207"; in the present Catalogue, "*C. 5-fasciata*, Rossi, F. E. 1. 139." The true reference is *C. 5-fasciatus*, Rossi, Mant. 1. 139 (and if the number of the species is to be added, 807).—J. W. D.

tricingulum (which is misprinted *trinagulum*). And lastly, take *Saropoda bimaculata* (p. 39); the form of citation indicates that St. Fargeau, Smith, Curtis and Shuckard all followed Spinola in referring the insect to the genus *Anthophora*, but such is not the case.

So also *Evania variegata*, Latr. and others (p. 8), should be *Evania variegata*, Fab., *Ceropales variegata*, Latr. and others; *Cemonus unicolor*, Panz. F. G. 52, 24, should be *Sphex unicolor*; *Hylæus dilatatus*, Nyland. Ap. Bor. 94 (p. 23) should be *Prosopis dilatata*, Nyland. Ap. Bor. Revis. 188; *Andrena denticulata*, Nyland. (p. 29) should be *A. Listerella*, Nyland.; *A. parvula*, Smith (p. 30) should be *A. minutula*, Smith; *A. xanthura*, Nyland. (p. 31) should be *A. chrysoscelus*, Nyland. (*nec* Kirby); *Cilissa hæmorrhoidalis*, Nyland. (p. 31) should be *Kirbya chrysura*, Nyland.; and *Anthophora retusa*, Nyland. Ap. Bor. 265 (p. 39) should be *Megilla retusa*, Nyland. Ap. Bor. Revis. 265. And in the top line of p. 25, the name *Melitta seladonia* is omitted before the reference to Kirby, Mon. Ap. Angl. ii. 57.

Others of the citations are misleading, if not erroneous. Take e. g. *Andrena Coitana* (p. 30). Any one would suppose from the reference "Nyland. Ap. Bor. 221" that Nylander recognised the species and adopted Kirby's name for it; but in truth Nylander confounded it with *A. nana*, and only mentions *Coitana* as a synonym of *nana*. Take again *Odynerus trifasciatus* (p. 21), under which we find a reference to "Wesm. Odyn. Belg. 7" (it should be p. 27); so far from treating *trifasciatus* as a species, Wesmael refers it to *O. parietum*.

At p. 27 of the Catalogue, under *Andrena rosæ*, we have the reference "*Melitta rosæ*, Kirby, Mon. Ap. Angl. ii. 83, ♀," and under *Andrena florea*, we have the reference "*Melitta rosæ*, Kirby, Mon. Ap. Angl. ii. 85 (*nec* Panz.)." Does this mean that the insect which Kirby supposed to be the ♂ of *A. rosæ* is in truth *A. florea*? or that the form which Kirby at p. 85 calls "Variety a" of *A. rosæ* is the Fabrician *florea*? or what does it mean?

At p. 29, under *Andrena picicornis*, we have the reference "*M. Lewinella*, Kirby, lib. cit. 149, ♂," and under *A. denticulata*, we have the reference "*M. Lewinella*, Kirby, lib. cit. 149, ♂ (var.)." If Kirby had described a typical *M. Lewinella*, and a variety, I should have conjectured that Mr. Smith's view was, that the typical form is the male of *picicornis*, and the variety not *picicornis* at all, but a ♂ var. of *denticulata*. But, on referring to the *Monographia Apum Angliæ*, I find only one form of *Lewinella* described; and I am driven to the conclusion that (according to Mr. Smith) *M. Lewinella* is not only the ♂ of *picicornis*, but is also a var. of *denticulata*—two forms which are not only treated as distinct species, but have no less than eight species placed between them.

Again, at p. 39, under *Anthophora retusa*, we have the reference "Dours, Mon. Anth. 172," and under *A. acervorum*, we have the reference "*A. retusa*, Dours, Mon. Anth. 172 (var.)." Unfortunately, I have not this work at hand; and I can only conjecture that Dours confounds two forms under one name *retusa*, at the same time indicating one of the forms as a "Var." But if this be the true explanation, ought not the citations to have run as follows?—

ANTHOPHORA RETUSA.—*A. retusa* (form. typ.), Dours, Mon. Anth. 172.

ANTHOPHORA ACERVORUM.—*A. retusa* (var.), Dours, Mon. Anth. 172.

In numerous cases, names are cited as absolute synonyms, whereas they belong to distinct races or forms, and this should have been indicated by the addition of

(var.) or some other abbreviation. For instance, *Apis ligustica* (p. 42) is rightly enough treated as not specifically distinct from *A. mellifica*; but no one will say that *A. ligustica* is an unqualified or absolute synonym of *A. mellifica*. At p. 40, the three forms described by Kirby as *Apis Rossiella*, *Francisana*, and *subterranea*, are all given simply as the ♂ of *Apathus campestris*; should not one have been indicated as the typical male, and the other two as varieties? And at p. 35, is not Nylander's *Caliowys hebes* (which somehow has got converted into *hebes*) sufficiently distinct from the normal *C. rufescens* to require the addition of (var.)?

When the sexes of the same species have been simultaneously described as distinct, I have always understood that when the two come to be re-united, and so require only one specific name, that of the male is adopted, and the female rejected. Dr. Knaggs's gallantry has led him to suggest that under such circumstances, the name of the female should be retained. (See Proc. Ent. Soc. 1868, pp. xliii, xliv.; Trans. Ent. Soc. 1871, p. 345). Mr Smith sometimes adopts the trivial name of the male, sometimes that of the female.

Thus, confining our attention to a decal from the 2nd vol. of the Mon. Ap. Angl., we have—

<i>Melitta fulvicornis</i> ,	p. 67, ♂ = <i>M. lævigata</i> ,	p. 75, ♀ ... HALICTUS LÆVIGATUS.
<i>M. pilosula</i> ,	p. 164, ♂ = <i>M. Gwynana</i> ,	p. 120, ♀ ... ANDRENA GWYNANA.
<i>M. atriceps</i> ,	p. 114, ♂ = <i>M. tibialis</i> ,	p. 107, ♀ ... A. ATRICEPS.
<i>M. Lewinella</i> ,	p. 149, ♂ = <i>M. picicornis</i> ,	p. 123, ♀ ... A. PICICORNIS.
<i>M. pubescens</i> ,	p. 141, ♂ = <i>M. fuscipes</i> ,	p. 136, ♀ ... A. PUBESCENS.
<i>M. denticulata</i> ,	p. 133, ♂ = <i>M. Listerella</i> ,	p. 137, ♀ ... A. DENTICULATA.
<i>M. contigua</i> ,	p. 140, ♂ = <i>M. fulvicrus</i> ,	p. 138, ♀ ... A. FULVICRUS.
<i>M. Coitana</i> ,	p. 147, ♂ = <i>M. Shawella</i> ,	p. 160, ♀ ... A. COITANA.
<i>M. subincana</i> ,	p. 158, ♂ = <i>M. connectens</i> ,	p. 157, ♀ ... A. CONNECTENS.
<i>M. Collinsonana</i> ,	p. 153, ♂ = <i>M. proxima</i> ,	p. 146, ♀ ... A. COLLINSONANA.

Out of these ten cases, it will be seen that Mr. Smith adopts the ♂ name in five and the ♀ in five, and I believe a like impartiality will be found to have been exercised, if all the instances of the kind which occur in the Catalogue were tabulated. Priority of place in the volume manifestly has not had any weight; and what the principle of selection is, I cannot discover; though I have no doubt that a good reason exists for each particular selection.

The Aculeata, with their males, females, and neuters, may be supposed to call special attention to questions of gender. I am one of those who think that the name of a genus is a noun substantive, with which an adjectival trivial name should be made to agree in gender. Consequently, when the Catalogue of Neuroptera was in progress, I was anxious to substitute *Lestes barbarus* for *Lestes barbara* (at p. 16); for surely if any generic names be masculine, *Lestes* must be one of them. So also in the present Catalogue, I note that *Passalæcus* (p. 18) and *Colletes* (p. 23) are nouns substantive of masculine gender; and consequently, that we ought to read *Passalæcus corniger* (not *cornigera*),* *Colletes succinctus*, *cunicularius*, *marginatus*, and *Daviesanus* (not *succincta*, &c.). I am aware that Staudinger (see the Introd. to the Cat. Lepidop. Eur., p. xiii. ed. 1871) wishes to consider every specific name, once published, as a proper name, and would write *Lycæna Minimus*, comparing it

* In the Ent. Ann. 1872, p. 102, Mr. Smith appears to refer this species to the genus *Diodontus*.—J. W. D.

with "Pauline Frederic!" Thanks, however, to Wocko and Zeller, we have been spared this shock, for the present. Space will not permit me to argue the question here; I will therefore only observe that something more than the blandishments of Miss Pauline will be required to reconcile me to *Lycena Minimus*, with or without the capital M. The Catalogue under review contains abundant intrinsic evidence that Mr. Smith has not adopted Dr. Staudinger's view; and I conclude that *Passalæcus* and *Colletes* are made feminine only by an oversight.

A more difficult question arises as to the gender of *Cæliorhys*. Apparently, the unvaried habit has been to treat it as feminine, probably because the species first included in it had already feminine trivial names—e. g., *4-dentata*—being brought from *Apis* or *Anthophora*—or because the Greek noun which enters into the composition of the word is feminine. It is to be regretted that Latreille did not write *Oxyælia*; or, if he was bent on putting the cart before the horse, *Cæliorhys* would have been better than *Cæliorhys*. As having some bearing on this point, I may refer to the observations on the generic name *Trachys* by Dr. Kraatz, Col. Hefte, vi. 31; see also p. 116.

Whilst on the subject of gender, I may note two or three slips in the citations of authors. Thus, p. 11, Linné wrote *Spheæ mystacea*, not *mystaceus*; p. 20, Rossi wrote *Crabro 5-fasciatus*, not *5-fasciata*. And the shade of the Rector of Barham must blush at having attributed to him a *Melitta rubicundus* (p. 24), and look uneasily at *Melitta 4-notatus* (p. 25) and *M. minutissimus* (p. 26); for the latter of which a wrong page also is cited.

Here also is the place to remark upon the anomaly of our having a *Crabro leucostoma* (p. 14) and a *Crabro chrysostomus* (p. 16). Many will be apt to think that both these specific names should terminate alike, either both *-mus*, or both *-ma*. I shall perhaps be told that—without going the length of Dr. Staudinger's proposition, and whatever *chrysostomus* may be, whether noun substantive or adjective—*leucostoma* is a noun substantive, "white-mouth," not an adjective, "white-mouthed;" and it is possible that, in support of this, I may be referred to E. M. M., vol. 5, where an attempt was made to shew that *Acanthosoma* is a neuter noun, and not a feminine adjective. Far be it from me to suggest a doubt as to the soundness of that argument! but I prefer to look at our *leucostoma* historically, and my "historic conscience" tells me that we ought to write *Crabro leucostomus*. The name originated with Linné, who described the insect as *Spheæ leucostoma*. Now, though the Greek word is masculine (which doubtless led Mr. Smith into the above mentioned misquotation of *Spheæ mystaceus*), Linné makes his genus *Spheæ* feminine throughout, perhaps to correspond with *Vespa*. Thus we have *Spheæ vaga*, *S. fusca*, *S. chlypeata*, and so on. It is true we have *Spheæ figulus*; and as the noun *figulus* was taken for the trivial name of one species, a noun *leucostoma* may have been taken for the trivial name of another species; and certainly Fabricius, when he removed the insect to the genus *Crabro*, did not write *Crabro leucostomus*. I fancy, however, that the specific name *leucostoma* was, with Linné, the feminine gender of the coined adjective *leucostomus*.

I have already remarked upon the name *Cæliorhys*; and, as a matter of choice, some might have preferred *Prionocnemis* to *Prioncnemis*. But on the whole the nomenclature of the Aculeata is pretty free from malformations and barbarisms.

With reference to the correction, in scientific names, of slips of the pen in spelling, and misprints, see the observations in Stett. Ent. Zeit. 1870, pp. 85-87.

As might have been expected, the conclusion of the scholarly Zeller is in favour of such corrections being made. I hail Mr. Smith as a convert to this view; and he has applied the principle with such rigour that the *Methoca ichneumonides* of Latreille becomes *ichneumonoides* (p. 5).^{*} Such is my laxness, that I should probably have allowed *ichneumonides* to pass muster.

Amongst the minor blemishes of this Catalogue, there is a want of uniformity in the abbreviations employed and in the mode of citation of the very same work. Take e. g. Curtis's British Entomology; it is well known that the plates are numbered consecutively throughout the whole work, and do not commence afresh with each volume, and that the text is not paged, but each leaf bears the number of the plate to which it belongs. In the Catalogue, sometimes the volume and plate are both indicated, at other times only the number of the plate; and in the references to the text, the unnumbered second page of a leaf is generally referred to in a manner which will be best explained by an example. Thus, at p. 22, we find "*Odynerus scoticus*, Cur. B. E. iii. pl. 138," and "*O. pictus*, Cur. B. E. iii. 138." The reference to the plate is erroneous, *O. scoticus* not being figured; and both *O. scoticus* and *O. pictus* are mentioned (they cannot be said to be described—but they are mentioned) not on the leaf of text which belongs to pl. 138, but on the back or second side of leaf 137, so that if iii. 137 was not thought sufficiently definite, the correct reference would have been iii. 137 (b). The same thing occurs at p. 32, where *Panurgus lobatus*, Cur. B. E. iii. pl. 102, should be iii. 101 (b); and at p. 36, where *Megachile Leachella*, Cur. B. E. v. 219, should be v. 218 (b). Altogether I find no less than five different forms of reference to Curtis's plates, exclusive of the form of reference to the text; thus—

- p. 5. *Tiphia minuta*, Curt. Brit. Ent. xiv. pl. 644 [it should be pl. 664].
- p. 12. *Gorytes bicinctus*, Cur. B. E. v. pl. 524 [it should be xi.].
- p. 15. *Crabro subpunctatus*, Cur. B. E. xv. pl. 80 [it should be pl. 680].
- p. 18. *Diodontus insignis*, Cur. B. E. xi. 796 [*i.e.* the text: it should be 496].
D. gracilis, Cur. B. E. xi. pl. 496 [it should be xi.].
- p. 23. *Colletes fodiens*, Cur. B. E. ii. f. 85.
- p. 37. *Heriades truncorum*, Cur. B. E. pl. 504.

So also, we have "Fab. Ent. Syst." and "Fab. E. S.;" "Latr. Hist. Nat. Crust. et Ins." and "Latr. H. N.;" "Zett. Ins. Lapp." and "Zett. I. L.;" &c.

And, whilst on the head of uniformity, it may be well to note the diversity between the form in which, under precisely similar circumstances, consecutive species are sometimes catalogued. Take e. g., *Megachile versicolor*, *pyrina*, and *odontura* (p. 36); or *Osmia parietina* and *pilicornis* (p. 38). *M. pyrina* and *O. parietina* follow the form usually employed in the List; but the other three do not. Moreover, under *M. versicolor*, a reference should be supplied to Zool. 1844, p. 697; and under *M. odontura* to Zool. 1849, App. p. lviii.

Occasionally we find the page correctly given, but the volume omitted. For instance, in the references to *Spheg gibba*, Lin. (p. 6), to *Larra pompiliiformis*, Spin. (p. 10), to *Apis vestita*, Fab. (p. 28), to *Hylæus florissomnis*, Fab. (p. 37, the pages of *H. florissomnis* and *maxillosus* have somehow been interchanged), to *Osmia Leatiana*, Spin. (p. 38), to *Anthophora retusa*, Blan. (p. 39), and to *Apis hortorum*.

^{*} In the Ent. Ann, 1872, p. 102, Mr. Smith includes *Methoca ichneumonoides* amongst the *Fossores*.—J. W. D.

Fab. (p. 42). In other cases we find the volume mentioned, but the page omitted. For instance, the genera *Astata* (p. 10), *Eumenes* (p. 20), and *Odynerus* (p. 21). One would have expected the works of Latreille to be accessible to supply these omissions; and in truth, in other references to the same works, the page is properly given. The references to Stephens are few and far between; one of the few is *Miscophus bicolor* (p. 10), where pl. 42, f. 3, instead of pl. 47, f. 4, is cited by a mistake, the origin of which is apparent on turning to the 7th vol. of the Illustrations.*

A short list of Errata is printed at p. 43 of the Catalogue; but it is manifest from what precedes that this list is not exhaustive. Neither the Introduction nor the Index has quite escaped. I have in fact noticed something like a hundred mistakes; how many are due to the copyist, and how many to the printer, I have no means of ascertaining. Most of these are fortunately minute and harmless, but the number of wrong pages is not inconsiderable. The extreme difficulty however of preparing and printing a Catalogue of this sort must always be borne in mind. The whole work is an endless series of figures and abbreviations, each one of which requires careful attention, and there is no context to give either a suggestion of error or a clue to the intention. The only wonder is therefore that the Errata are not more important.

Finally, the typography, paper, and general aspect of the Catalogue are all that can be desired, and the price at which it is published places it within everybody's reach. The little blemishes which I have alluded to are the spots on the sun's face, and I am aware that I run the risk of being considered hypercritical in drawing attention to such minutiae. When all is said, there remains no small debt of gratitude to Mr. Smith for the compilation. Knowing by experience the monotonous drudgery of such a task, I use no empty formula when I express my thanks for what he has done. And if I have ventured to criticize in detail, I am sure he knows me better than to attribute this to any desire on my part to carp at his work, and will give me credit for wishing only to avoid the repetition in the Catalogues of the future of what seem to me to be the defects of the present.

It is understood that the next instalment will include the *Ichneumonidae* and some other Parasitic Hymenoptera, by the Rev. T. A. Marshall. I presume the *Chrysididae* will be included in this Part, and will probably form the commencement of it, since they would seem to be in natural sequence to the Aculeata. The printing of these Catalogues is a severe drain upon the resources of the Society, and Entomologists at all events would be glad if by external assistance—such as a grant in aid from the Government Grant Committee of the Royal Society—more rapid progress could be made in the publication. One thing is certain, that if the scheme is carried out, all the money will have been well spent; whilst if it should fall short of completion for want of funds, Entomological Science, if she will not sustain a heavy loss, will at any rate fail to realize a gigantic gain. I conclude then by wishing success to the proposed "General Catalogue of the Insects of the British Isles," and may it be soon finished as well as it has been begun!—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn, January, 1872.

* Mr. Smith places the genera *Tachytes*, *Miscophus*, *Dinetus*, and *Astata* in a family which he calls *Larridae*. Surely the *Larridae* must be the family of which *Larra* is the typical genus. But on a reference to Proc. Lin. Soc. xi. pp. 363, 367, it will be seen that so far from regarding *Larra* as the type of the *Larridae*, Mr. Smith places it in the family *Nyssonidae*. If *Larra* belongs to the *Nyssonidae*, some other name should be found for the family of which *Tachytes* is a member. We have long been accustomed to the play of Hamlet with the part of Hamlet left out, and we have recently heard a good deal of a Republic without republicans; but a fam. *Larridae*, to which the gen. *Larra* does not belong, is insupportable.—J. W. D.

Haggerstone Entomological Society.—This Society held its fourth Annual Exhibition on the 23rd and 24th November last, at the rooms, Brownlow Street, Dalston. The Exhibition was largely patronised on both evenings, the rooms at times being inconveniently crowded. Amongst the exhibitions were the following: Mr. Dow—*Nola albula*. Dr. Gill—*N. strigula*, *Zygæna exulans*, &c. Dr. Knaggs—*A. helvetina* of Boisduval, a species new to Britain. Mr. Bond—an extraordinary var. of *B. trifolii*. Mr. J. Moore—*A. alni* and *C. erythrocephala*. Mr. T. Cooke—*D. pulchella*; also some rare exotic *Lepidoptera*. Mr. Davis—*Pempelia albariella* of Zeller ("*Phycis Davisellus*" of Newman) and *S. sacraria*. Mr. Clarke—a single example of each species of the British butterflies. Mr. Healy—"life-histories" of several species of saw-flies. Mr. E. G. Meek—*D. pulchella*, *M. ostrina*, *X. conformis*, and *N. centonalis*. Mr. A. Harper—*H. armigera*, *H. dipsacea*, *A. melanopa*, *D. rubiginea*, &c. Mr. Bartlett—*L. quadra*, *C. ocularis*, *D. roboraria*, and "*Agrotis comes*" (var. *Curtisii*). Mr. D. Pratt—*L. Boscana*, *E. hybridellana*, *E. venustula*, *H. auroararia*, &c. Mr. Gates—*A. flexula*, *H. Christiennana*, *P. ornatella*, &c. Mr. J. W. Rupell—*C. ocularis*, *X. aurago*, and *S. chrysidiformis*. Mr. Bush—*N. hispidaria*, and fine var. of *C. bilineata*. Mr. Lormier—black *L. Sibylla*, *S. sacraria*, &c. Mr. J. Bryant—*Z. exulans*, *A. myricæ*, &c. Messrs. C. Williams; Raine and Hoey exhibited cases containing preserved larvæ; also "life-histories" of several species of *Lepidoptera*. Mr. H. Moore—some handsome cases of ornamental entomology.

The following gentlemen also exhibited—Messrs. Barlow, J. Meek, Munday, Boulden, Gibson, Lepelley, Franklin, Reynolds, Bramley, Glover, Harrison, Hillman, Oldham, and Chitty.

Altogether, the Meetings were completely successful.

ENTOMOLOGICAL SOCIETY OF LONDON, 1st January, 1872.—A. R. WALLACE, Esq., F.Z.S., President, in the chair.

The Secretary read a communication from Mr. Gould respecting birds as enemies of dragon-flies. Mr. Gould had no doubt that the Hobby and Kestrel attacked the larger kinds; and he had observed sparrows, &c., preying upon *Agriionidæ*, the wings of which they carefully detached.

Mr. Müller called attention to a paper by Dr. Emile Joly, in which the author associated the so-called crustaceous genus *Proscopistoma* with the *Ephemeridæ* as immature conditions.

Mr. Mo Lachlan made some further remarks on certain Linnean species of *Myrmeleon*.

Mr. F. Smith communicated notes by Mr. J. T. Moggridge respecting the winter habits of ants of the genus *Aphenogaster*, as observed by him at Mentone. These notes revived the question as to whether any ants store up seeds for winter provision; and Mr. Moggridge's observations tended to prove that such is the case. These ants excavated galleries, and in the chamber at the end of the galleries there was always to be found a stock of the seeds of late-fruited plants, which he had seen the ants conveying into their runs. Outside the galleries there was generally a heap of empty husks, the farinaceous contents having been extracted through a hole on one side. Seeds which commenced to germinate were brought out, and the radicle having been bitten off, they were again transported into the interior. Myrmecophilous beetles were not present in the perfect state; but there was a *Lepisma*, and also Coleopterous larvæ. Mr. Moggridge promised to communicate to the Society the result of continued observations.

Mr. Butler read a paper on *Pericopides* in the collection of Mr. W. Wilson Saunders.

LIST OF MACRO-LEPIDOPTERA OBSERVED IN NORTH-WEST
MOROCCO IN 1870-71.

BY TROVEY BLACKMORE.

Two years ago, I contributed to the Ent. Monthly Magazine a list of *Lepidoptera* observed at Tangier, in the spring of 1868. Since that time I have spent the greater part of two winters and springs in the same locality, and have collected a large number of insects of most orders, a record of which I hope from time to time to furnish to this magazine. Pending the examination and determination of some of my captures of *Coleoptera* and *Hemiptera*, I annex the following list of the *Lepidoptera* with which I have met. It will be noticed that I have taken specimens of every species captured by me in 1868, with the exception of *Crateronyx Philopalus*.

I have marked with an O. several species taken by Signor Olcese, a resident Italian entomologist, whose attention is mainly devoted to *Coleoptera*, but in whose boxes I found a few *Lepidoptera*, all taken in the immediate vicinity of Tangier. In the following list, I have adopted the arrangements of Doctor Staudinger's recent "Catalog der Lepidopteren des Europäischen Faunengebiets."

RHOPALOCERA.

Papilio Podalirius, L. The variety *Feisthamelii*, Dup., occurs commonly in the spring at Tangier. I met with the typical form at Fez. Dr. Hooker, who has this year visited the Atlas mountains, saw this species at an elevation of 6000 feet.

Papilio Machaon, L. O.

Thais Rumina, L. Not uncommon in March. The variety *Medesicaste*, Ill., abundant.

Pieris brassicæ, L., and *rapæ*. Both abundant, and the specimens very large.

Pieris napi, L. Several.

Pieris Daplidice, L. One small and very dark specimen, early in April.

Anthocharis Belemia, Esp. Common on sunny places in December, January, and February, frequenting the flowers of a sweet-smelling *Iberis*. Later in the year, April and May, appears the variety *Glaucæ*, Hb., in the some localities. It seems to be a first brood, of which the typical *Belemia* is the second.

Anthocharis Belia, Cr. A single specimen in April.

Anthocharis Eupheno, L. (*Douei*, Pierret). I secured a splendid series of this beautiful species, which is common near Tangier in the early spring. The females are rare, occurring in the proportion of one to every ten males.

- Colias Edusa*, F. Abundant, the ab. ♀ *Helice*, Hb., not uncommon.
Rhodocera rhamni, L. Common.
Rhodocera Cleopatra, L. Common.
Thecla ilicis, Esp. O.
Thecla rubi, L. Abundant.
Thestor Ballus, F. Common.
Thestor mauritanicus, Luc. I was so fortunate as to capture two specimens (males) of this scarce species.
Polyommatus Phlaeas, L. Abundant.
Lycæna Telicanus, Lang. A specimen at Tangier in May, and a second at Oulad-Khalifa, 100 miles S. of Tangier, May,
Lycæna Lysimon, Hb. One specimen, December.
Lycæna Astrarche, Bgstr. (*Agestis*, W. V.). Common early in May.
Lycæna Argiolus, L. Abundant, March and April.
Lycæna melanops, Boisd. Several specimens on the Jibel-el-Kebir, a mountain near Tangier.
Charaxes Jasius, L. O.
Vanessa Atalanta, L. Very abundant.
Vanessa cardui, L. Very abundant.
Pararge Egeria, L. The variety *Meone*, Esp., common throughout the winter.
Epinephile Janira, L. Was represented by the form *Hispulla*, Hb.
Epinephile Ida, Esp. Abundant in May.
Cænonympha Arcanoides, Pierret. Common, April.
Spilothyrus alceæ, Esp. (*malvarum*, Ill.). The variety *australis*, Zell., of frequent occurrence.
Syrichthys Alveus, Hb. Several, April.
Hesperia Acteon, Esp. Common in a marshy spot at the foot of the Dar-a-Clow hills, 25 miles S. from Tangier.

SPHINGES.

- Acherontia Atropos*, L. O.
Deilephila livornica, Esp. Abundant.
Deilephila Celerio, L. Common.
Macroglossa stellatarum, L. Abundant.
Naclia punctata, F. One specimen of the form *servula* (Berce, Ann. Soc. Ent. Fran., 1862.) taken by Signor Olcese.

BOMBYCES.

- Deiopeia pulchella*, L. O.
Arctia villica. Several at light, end of April.

Euprepia pudica, Esp. O.

Zenzeria pyrina, L. (*æsculi*, L., Syst., Nat. xii.). O.

Orgyia antiqua, L. O.

Porthesia similis, Fuess. (*auriflua*, W. V.). O.

Bombyx trifolii, W. V. Bred commonly by Signor Olcese. Specimens which he has given me appear to be the variety *retamæ*, H. S.

[*Crateronyx Philopalus*, Donzel. In the Ent. Monthly Magazine, Vol. v, p. 300, I record the capture at Tangier, of a large unknown Bombyx. This proves to be a species captured thirty years ago, in the province of Constantine, in Algeria, described and figured by Donzel, in the An. Soc. Ent. de France, 1842, p. 198, under the name of *Bombyx Philopalus*. Dr. Staudinger refers it doubtfully to Duponchel's genus *Crateronyx*.]

Cerura sp. —. Pupæ exactly resembling those of *Cerura vinula*, L., were common on poplar trees near Tangier, but I did not succeed in rearing the perfect insect.

NOCTUÆ.

Bryophila perloides, Gn. One specimen, O.

Agrotis obscura, Brahm. (*ravida*, W. V.). Several.

Agrotis pronuba, L. Abundant.

Agrotis puta, Hb. Common at light.

Brotolomia meticulosa, L. O.

Calymnia trapezina, L. O.

Calophasia platyptera, Esp. A fine specimen bred from a pupa enclosed in a cocoon formed of coloured lichens.

Ocullia chamomillæ, W. V. One specimen in April.

Plusia gamma, L. In excessive abundance in the spring.

Heliothis peltigera, W. V. Abundant.

Acontia lucida, Hufn. Variety *Albicollis*, F. O.

Acontia luctuosa, W. V. Several in the collection of Signor Olcese, and one taken by myself at El-Araish, early in June.

Thalpochares ostrina, Hb. A fine specimen at light, in December.

Thalpochares parva, Hb. One specimen, January.

Agriphila trabealis, Scop. (*sulphuralis*, L.). O.

Grammodes algira, L. One bred from pupa under poplar bark, May.

Spintherops spectrum, Esp. O.

Hypena lividalis, Hb. Common.

Hypena obsitalis, Hb. Common.

GEOMETRÆ.

Acidalia vittaria, Hb. Several specimens, end of April.

Acidalia ochrata, Scop. Some very large specimens on the banks of the Wad-Sebou, a river 90 miles S. of Tangier.

Acidalia virgularia, Hb. The variety *calcearia*, Z., common early in May.

Acidalia degenaria, Hb. A specimen of variety *rubraria*, Stgr., taken by Signor Olcese.

Eubolia gazella, Kollar? A single ♂ specimen of a *Eubolia* taken by Signor Olcese has been returned to me by Dr. Staudinger, to whom I sent it for determination, as being probably a variety of *gazella*, Kollar. This species has hitherto been captured only in Egypt, and its occurrence so far west as Tangier, is remarkable. The specimen also approaches *Eubolia perviaria*, of Lederer, a species peculiar to Syria (Beirut).

Sterrhæa sacraria, L. Common.

Eupithecia pumilata, Hb. An abundant species.

PYRALIDINÆ.

Aglossa pinguinalis, L. Common.

Asopia furinalis, L. Abundant. The specimens which I preserved are much darker than English types of this species.

Scoparia angustea, Stph. One specimen.

Threnodes pollinalis, Schiff. O.

Botys sanguinalis, L. The variety *hæmatalis*, Hb., common.

Botys polygonalis, Hb. Common.

Botys verbascalis, W. V. O.

Botys ferrugalis, Hb. Abundant.

Eurycreon palealis, Schiff. Common.

Nomophila noctuella, W. V. (*hybridalis*, Hb.). Very abundant.

Nephopteryx Dahliella, Tr. O.

(A specimen of *Cerastis*, and one of *Cidaria* cannot be assigned to any known species of those genera, but the examples, both of which were captured at light, are not in sufficiently good preservation to admit of being described as new species.)

The Hollies, Wandsworth :

October 11th, 1871.

LIST OF *TORTRICINA* AND *TINEINA* COLLECTED IN NORTH-WEST MOROCCO BY MR. TROVEY BLACKMORE, IN 1870-71.

BY H. T. STAINTON, F.R.S.

Before proceeding to enumerate the species, it may be as well to preface my remarks with the following account of the localities, which I received from Mr. Blackmore, in the month of June, 1870.

"The greater number of the specimens were obtained from the *Marshen*. This is a plateau about five or six hundred feet above the sea, extending from the Western side of the citadel of Tangier to the Jews' river, a distance of a mile. At the end nearest the town, it is covered with short herbage, and is surrounded with gardens, having hedges of cane, aloes, or prickly-pears. Where it slopes down to the Jews' river, it is very rocky, and amongst the rocks, *Cistus*, *Coronilla*, *Myrtle*, and a great profusion of shrubs and flowers, were growing. This was my principal collecting ground for the *Micros*.

"Past the Jews' river is another hill, much loftier than the *Marshen*. I should fancy it must be over 1200 feet high. It is called *Gibel-el-Kebir* (Great Hill), and from the very great variety of vegetation with which it is covered, I should fancy that, if well worked, it would yield a goodly number of insects of all orders; but I had few opportunities of collecting on it, as it was almost too far for my walking powers.

"*Swany* is a small village about a mile and a-half out of Tangier; and in a lane, uniting the two places, I captured a few things. This lane is bordered on both sides by gardens and orchards, fenced in by canes or aloes, but among them *Olematis*, *Aristolochia*, *Sarsaparilla* &c., &c., were growing.

"The *Wad-el-Halk* locality is a meadow by the edge of a river of that name, East of Tangier, the only decent bit of grass in that neighbourhood. Between the *Wad-el-Halk* and Tangier are some extensive sand-hills, where scarcely anything but a peculiar kind of white broom will grow."

TORTRICINA.

Tortrix pronubana, Hübner. One specimen from a hedge near the town of Tangier, April 25th, 1870. According to my own experience, this is a common pest in the Mediterranean region, resembling in its omnivorous habits our *T. rosana* and *T. xylosteana*.

Grapholita succedana, Frölich. Four specimens taken amongst broom on the sand-hills, January 4th to 20th, 1870, may, perhaps, be referable to southern forms of this species: they look, however, very different from our English *ulicetana*.

Grapholita, n. sp. ? Allied to *microgrammana*, but with narrower anterior wings and white posterior wings. Two specimens, taken amongst broom on the sand-hills. January 15th, 1870.

Carpocapsa pomonella, L. One specimen, taken in the house, May 1st, 1870.

Phthoroblastes spiniana, Dup. One specimen, Gibel-el-Keber, March 18th, 1870.

Eupæcilia, sp. ? A single specimen of a dull-coloured *Eupæcilia* from a new locality would not be easily named, and I therefore refrain from the attempt. Taken on an aloe hedge, at Marshen, April 20th, 1870.

Lozopera, n. sp. ? This is so sharply marked that I feel strongly tempted to describe it as new. The straw-coloured anterior wings have two rather broad, oblique, reddish-brown fasciæ, of which the outer one is furcate exteriorly towards the inner margin, the fork, however, not attaining the inner margin ; unless it be a form of *Cochylis sanguinana*, Treitschke (Staud. and Wocke, 859), I expect it will prove a good species. One specimen, in very good condition, taken at Marshen, among grass, April 21st, 1870.

TINEINA.

Solenobia pretiosa, n. sp. ? A very neat and delicate looking insect ; in form of wing closely resembling *S. lapidicella*, but much paler, and with the reticulations of the anterior wings more neatly expressed, and with the head pale yellow ; antennæ not pectinated, but slightly pubescent. Exp. al. 5 lines. One specimen, taken amongst low plants, at Marshen, April 26th, 1870.

Blabophanes ferruginella, Hübner. Four specimens, taken in the house, December 10th, 1869.

Tinea granella, L. A dark specimen, taken in the house, March 31st, 1870.

T. nigripunctella, Haw. One specimen, in the house, April 10th, 1870.

T. fuscipunctella, Haw. Two specimens, taken in the house, December 4th and 10th, 1869.

T. chrysopterella, H.-S. One specimen, near Fez, in the spring of 1871.

Micropteryx imperfectella, Staudinger. Eight specimens, mostly in very fine condition, found amongst low plants in a lane near Tangier, March 19th, 1870.

These specimens are certainly specifically identical with Mr. Blackmore's previous capture in March, 1868, recorded in this Magazine, Vol. v, p. 300, but are in far better condition. I still believe

that they are Staudinger's *imperfectella* ; but Herrich-Schäffer's figure, which Staudinger says in the Stettin. Ent. Zeit., 1859, p. 266, is "recht gut," represents the basal spot in a wrong position.

Unless a *Micropteryx* is in very good condition, it is sometimes no easy matter to trace the form and outline of the markings, and I attribute to this cause the discrepancy between Herrich-Schäffer's figure and the specimens I have now before me. In these, the first spot is transversely placed at some distance from the base, and begins at the sub-costal nervure, or even a little above it, and reaches to the fold ; the basal and dorsal portions of the anterior wings are golden, but the costal portion, after the first spot, is brilliant crimson. It is a much more brilliant insect than *M. Paykullella*, though the position of the three posterior spots is very similar ; the first spot of *M. imperfectella* is totally unrepresented in *M. Paykullella*.

Plutella cruciferarum, Zell. Two males and three females, taken amongst brambles, at Marshen, April 26th, 1870.

Depressaria bipunctosa, Curt. A worn, hibernated specimen, which I think is referable to this species ; it was found under aloe leaves, January 16th, 1870.

Gelechia vilella, Zell. Two specimens, found in the house, January 20th, 1870.

G. (Lita) subdiminutella, Stain. A single specimen (which I believe to be referable to this species) was taken on a hedge on the road to Swany, April 28th, 1870.

Sophronia, n. sp. ? Closely allied to *chilonella*, and, unfortunately, in very bad condition ; but on both wings I see under the end of the white costal streak, a small white blotch on the disc, with which I am not acquainted in any described species of the genus. A single specimen, much worn, taken amongst *Coronilla*, at Marshen, April 26th, 1870.

Pleurota bicostella, L. One specimen, amongst rushes, Gibel-el-Keber, April 27th, 1870.

Butalis senescens, Stain. Mr. Blackmore has collected a series of an insect which agrees precisely with my Mentone specimen, which I referred to *B. senescens* (Tineina of Southern Europe, p. 222). One of his specimens was captured amongst rushes, at Gibel-el-Keber, April 27th, 1870, in the immediate vicinity of *Cistus* bushes ; the others were taken in *Cistus* flowers, at Marshen, May 1st, 1870. It seems scarcely possible that this should be identical with our British *Thymus*-feeding *B. senescens* ; and I should not be at all surprised if, eventually, its claim to rank as a distinct species were made out.

- Butalis tangerensis*, n. sp. Closely allied to *B. chenopodiella*, but wants both the distinctive characters of that species, namely, the pale spot in the apical cilia of the anterior wings and the bare streak in the posterior wings. Anterior wings dark fuscous, with pale greyish markings; first, an oblique blotch from the inner margin, near the base, reaching to the sub-costal nervure; then, a larger, less defined, blotch, above the anal angle, comprising three black dots, one on the inner margin, one on the fold, and one a little beyond it, above the fold; towards the end of this blotch are a few black scales, forming a short, oblique streak. Exp. al. $6\frac{1}{2}$ lines. One specimen, taken near Tangier, in the spring of 1871.
- Acrolepia vesperella*, Zell. A single specimen, much worn, taken on the sand-hills, East of Tangiers, on the 9th of February, 1870.
- Coleophora*, n. sp.? Closely allied to *C. badiipennella*, but neater and paler. One specimen, amongst low plants, at Marshen, April 22nd, 1870.
- C. fuscicornis*, Zell. One specimen, near Tangier, in the spring of 1871.
- C. cæspititiella*, Zell. Two specimens, among low plants, at Marshen, April 20th and 26th, 1870.
- Pyroderces argyrogrammos*, Zell. One specimen, among low plants, at Marshen, April 20th, 1870. Monsieur Millière now takes this insect at light in his garden at Cannes, hence I am in hopes we shall soon ascertain the habits of the larva.
- Elachista sepulchrella*, n. sp. This is so very distinct that I have no hesitation whatever in describing it as new. At a first glance, I thought it was *E. disemiella*, Zell., but, on comparing the two insects, I found the positions of the two black spots were different; and the wings in *E. sepulchrella* are all broader and shorter than *E. disemiella*, and the posterior wings much darker. The last spot in *E. sepulchrella* is on the fold, but placed more posteriorly than in *E. disemiella*; the discoidal spot is about half-way between the first spot and the apex of the wing. Exp. al. $4\frac{1}{2}$ lines. One specimen, at the Swanbury place, February 8th, 1870.
- Urodeta cisticolella*, Stain. Three specimens, taken April 27th, 1870, amongst rushes, at Gibel-el-Keber, in the immediate vicinity of *Cistus* bushes; and May 1st, 1870, in *Cistus* flowers, at Marshen. These were the first flown specimens I had seen, and I was rather perplexed at first where to refer them; placed among a series of *Butalis senescens* (taken in the same localities, at the same date), I thought of a second and much smaller species of *Amphisbatis*, but when I referred to the palpi, I perceived they could be no other than my Cannes insects, noticed in the 'Tineina of Southern Europe,' p. 226.

Tischeria complanella, Hübner. One, amongst bracken, Marshen, April 26th, 1870; and one, on a hedge along the roads to Swany, April 28th.

T. angusticollis, Zell. One, amongst low plants, Marshen, April 26th, 1870.

Lithocolletis tangerensis, n. sp. This is the same as the un-named *Lithocolletis* noticed by me amongst Mr. Blackmore's previous captures at Tangier, in March, 1868 (Ent. Mo. Mag., Vol. v, p. 301), the suggestion was there thrown out that it was attached to *Coronilla*. I have now before me nine specimens, some in very fine condition, beaten from *Coronilla*, at Marshen, April 20th, 1870.

Somewhat allied to *L. scopariella*, but a shorter winged and paler insect; indeed, the palest specimens would be best described by treating white as the ground colour, thus:—Anterior wings white, with a small, pale golden blotch along the costa, at the base, and a smaller one near the inner margin; nearly in the middle of the wing is an angulated, pale golden fascia, and a little beyond the middle is another similar fascia, beyond the apex of which are two pale golden spots on the costa, and one on the inner margin; none of these markings have dark margins; a dark hind marginal line in the cilia is faintly indicated, and is preceded by a small, dark, apical spot. Head white, tinged with pale golden. Exp. al. $3\frac{1}{2}$ lines.

Oemiosoma, n. sp.? One of the *spartifoliella* group, but smaller than any of our European species. Exp. al. $2\frac{1}{2}$ lines. Two specimens, taken among herbage, near *Coronilla* bushes, at Marshen, April 20th, 1870.

Nepticula aurella, Fab. One, on an aloe leaf, near Tangier, March 16th, 1870.

PTEROPHORINA.

Amblyptilia acanthodactylus, Hübner. One, among low plants, at Marshen, April 22nd, 1870.

Oxyptilus latus, Zell. One, near Tangier, in the spring of 1871; and a worn specimen, probably referable to this species, was taken on the road to Swany, April 28th, 1870.

Mimæseoptilus serotinus, Zell. A worn specimen, probably referable to this species, was taken on grass, at Marshen, April 20th, 1870.

Leioptilus carphodactylus, Hübner. A worn specimen, probably referable to this species, was taken among low plants, at Marshen, April 22nd, 1870.

Mountsfield, Lewisham, S.E. : January, 1872.

NOTES ON *CICINDELIDÆ* AND *CARABIDÆ*, AND DESCRIPTIONS OF
NEW SPECIES (No. 13).

BY H. W. BATES, F. L. S.

Genus *OXYGONIA*.

Mannerheim, Bull. Moscou, 1837, ii, 17.

Amongst the many fine and rare insects brought home by that prince of collectors, Mr. Buckley, from his second journey to Equador, are six new species of this splendid genus of tiger-beetles. Most of the *Oxygoniæ* previously known have been described from unique examples, and consequently from one sex; but Mr. Buckley succeeded in obtaining numerous specimens of both sexes of four of his species, and has thus enabled us to study the sexual differences and the range of variation in the genus. The males of two of the species (*O. gloriola* and *Buckleyi*), from their rich colouring, are among the handsomest of the family.

In a short paper published in the Transactions of the Entomological Society (1871, p. 378), I pointed out the affinities of the genus, which for many years had been misunderstood. The *Oxygoniæ*, in fact, belong to a natural group of true *Cicindelinae*, differing structurally from *Cicindela* only by their very elongate body and sulcated tarsi; the latter character being, however, not without some exceptions. The principal genera of the group are *Odontocheila* (Tropical America), *Phyllodroma* (Tropical America), *Peridexia* (Madagascar), and the less typical *Thopeutica* (Malay Archipelago). The prevailing style of markings of the elytra differs from that of *Cicindela* in consisting of two, three, or four small white marginal spots (sometimes connected with a lateral stripe), and in the absence of the usual lunules and bands. In the aberrant *Thopeutica*, only, is observed a tendency towards the complete humeral and apical lunules and central band so characteristic of *Cicindela*. The group is distinguished from the true *Cicindelæ* also by their habits; the majority avoiding open, sandy, and sunny places, and dwelling in the shades of the tropical forest, where they settle on foliage almost as often as on the ground. From Mr. Buckley we learn the interesting and entirely new fact that the *Oxygoniæ* are found chiefly on mossy stones in the beds of rapid streams, in company with the *Oxycheilæ*, which Goudot long ago reported to frequent similar haunts. Mr. Wallace has stated the same fact regarding *Thopeutica gloriosa*, which he could take only by wading in the cold waters of mountain torrents in Northern Celebes. Mr. Buckley discovered the haunts of the Equadorian *Oxygoniæ* accidentally, while bathing in the River Upano, or Upper Morona, near Macas. Crawling on to a rock in mid-stream, he (C.

rather, his companion Villagomes) found the first specimen, and it was by dint of swimming from rock to rock in the cold, rapid waters that he succeeded in obtaining a good series of three of his species, besides two new *Oxycheilæ*. I had myself occasion to observe that some of the handsomest species of *Odontocheila* (a closely-allied genus) preferred the margins of shady streams. I never found *O. Batesii* except on aquatic plants and grasses, and only in the shade of the forest.

As to the generic characters, they require some modification. The bi-spinose apices of the femora are not a constant feature; and the "*elytra apice explanata, singulatim acute acuminata*" of Mannerheim applies only to the males of some species. The labrum in none of the eight species in my own collection agrees with the definition originally given by Mannerheim, "*quinque dentatum, dentibus tribus mediis approximatis, minutis, acutis*;" it is, however, as in Mannerheim's typical species, always short and transverse; but in none, male or female, is there more than one central tooth; this is always a little elevated, and sometimes projects as a longish spine, though in one species it is short and obtuse: beneath this central tooth, on each side, the fore margin is a little uneven, but there is nothing approaching the tridentate form, and no trace of an exterior tooth on each side; the angles are rounded or truncate. The labrum offers no sexual differences. The mandibles are longer and have longer and stronger teeth than in *Odontocheila*, but the palpi afford probably the best structural means of distinction, the terminal and penultimate joints of the maxillary being much elongated and scarcely unequal in length; thus differing from *Odontocheila*, in which the penultimate is much abbreviated. The antepenultimate ventral segment in the ♂ is very deeply cleft in the middle, and the third segment strongly dilated posteriorly on each side.

The following notes comprehend all the known species of this rare and beautiful genus.

OXYGONIA SCHÖNHEIMERI.

Mannerh., Bull. Mosc., 1837, ii, 19.

Mannerheim described this typical species from a single male taken near Antioquia in the valley of the Cauca, and therefore distant some 500 miles of latitude from the locality of Mr. Buckley's species. It is 7 lines in length, obscure brassy, the elytra with the margin and suture narrowly bordered with green, and having three marginal spots, the humeral and apical oblong, and the middle one rounded. The colour of the labrum is not mentioned; the elytra are given as regularly and finely punctured, with their apices singly produced and acute. The

four posterior femora are acutely bispinose. The five-dentate labrum readily distinguishes it from *O. moronensis*, the only species approaching it in colour.

O. PRODIGA.

Cicindela (Phyllodroma) prodiga, Erichson, Consp. Faun. Peru., p. 68.

The following is all the description Erichson thought proper to give of this species, found by Tschudi, probably on the Upper Huallaga in Peru :

"C. splendida, viridis, elytris lateribus cupreis, maculisque tribus lateralibus albis. Long. 7 lin."

Baron Chaudoir, in the description of his *O. Vuillefroyi*, incidentally states that Erichson's species is of a fine blue colour changing to violet, and that the description applied to the ♀.

In none of Mr. Buckley's specimens are the elytra green, or blue-violet with coppery margins.

O. VUILLEFROYI.

Chaudoir, Rev. and Mag. Zool., Jan., 1869, p. 2.

Described from a ♀ example, 15 millimètres long, received from "Quito." The colour is "d'un vert olivâtre plus tendre," *i. e.*, more delicate than the brilliant blue of Erichson's species. This colour agrees with that of several specimens (♀) taken by Mr. Buckley, and which I describe further on as *O. floridula*. Unfortunately, Baron Chaudoir's description is a comparative one, drawn up with regard to *O. prodiga*; he is comparing it, therefore, with a species which cannot possibly be known to those who have not the type before them. He states, however, that the elytra of his insect are entirely covered with a very fine punctuation, and that the middle lateral spot curves crescent-like on the disc towards the base. In these features it differs entirely from *O. floridula*.

O. DENTIPENNIS.

Germar, Guérin's Magaz. de Zool., 1848, pl. 124.

A small species, only four lines long, from South Brazil, differing from all the Andean species by the elytra being truncated at the apex, with a long exterior spine (♀?).

This species is that most generally figured as illustrating the genus *Oxygonia*: thus giving quite an erroneous idea of the typical forms of this group.

O. ALBITÆNIA.

Bates, Trans. Ent. Soc., 1871, p. 377.

A male, from Mr. Chesterton's collection; New Granada; differing from *O. Schænherrii* by the broad whitish marginal stripe of the elytra, which absorbs the humeral and apical spot but not the middle one which projects from the border. The tooth of the labrum is very broad and very obtuse; the labrum is black with two pale spots. The elytra are singly produced and acute at the tips as, in *O. Schænherrii*.

O. CYANOPIA.

Bates, Trans. Ent. Soc., 1871, p. 377.

♀. Bright blue with violet reflections. Differs from all Mr. Buckley's blue *Oxygonia* (all of which are ♀) in the absence of the anterior lateral spot. It is, besides, smaller and narrower, and has two long spines at the apices of the four posterior femora, which none of those specimens possess. The elytra are uniformly but rather sparsely and finely punctured, without densely punctured or smooth patches. The labrum is black with two pale spots, and the central tooth is well developed. I doubt whether it can be the ♀ of *O. Schænherrii* or *O. albitænia*.

New Granada.

OXYGONIA GLORIOLA, *sp. n.*

♂. *Suprà rubro-cuprea, splendida, capitis vertice obscure viridi, elytris vitta lata suturali pone medium dilatata, longe ante apicem terminanti, viridi-cænea; labro nigro, maculis duabus magnis pallidis, medio valde unidentato; capite inter oculos posticeque crebre strigoso; thorace suprà omnino acute subgrosse transversim striato, lateribus paululum rotundatis, disco utrinque minime convexo; elytris ad apicem sicuti oblique truncatis, subito depresso-explanatis, angulo suturali producto, acutissimo, suprà ad basin juxta suturam gibbosis, deinde impressis, punctatis, punctis plagiatis densioribus plagisque duabus lævissimis, una discoidali pone medium, altera ante apicem; maculis tribus marginalibus quartaque parva sub humero albis; corpore subtus splendide sub-viridi-aureo; pedibus nigris, femoribus viridi-cæneis; palpis flavis, articulo ultimo nigro.* Long. 7 lin. Long. elytr. $4\frac{1}{2}$ lin.

♀. *Suprà cyanea, prope apicem viridis, splendida, plus minusve violaceo-tincta, vel violacea, viridi-tincta; capite thoraceque ut in ♂, at labro omnino nigro; elytris ad apicem late obtuse rotundatis, prope suturam leviter sinuatis, ad angulum suturalem fortiter spinosis, suprà ut in ♂ (sed macula sub-humeralis abest), apice subito depresso-explanatis; corpore subtus femoribusque cæneo-viridibus; palpis flavis, articulis duobus ultimis nigris; antennarum articulo basali tantum metallico.* Long. 7 lin.

Many examples of both sexes. The head in the ♀ is decidedly broader behind the eyes than in the ♂. In all examples the elytral spots are rather large, broad and conspicuous, the middle spot is slightly transverse, but not linear; the spot under the humeral callus in the ♂ (absent in the ♀) appears a frequent sexual character in this genus.

OXYGONIA FLORIDULA, *sp. n.*

♂. *O. gloriolæ eodem sexû gracilior, capite angustiori, colore obscuriori; capite viridi, vertice purpureo, labro nigro maculis duabus pallidis; palpis pallidis, maxillaribus articulis duobus, labialibus articulo ultimo, nigris; thorace strigoso, disco purpureo, marginibus viridi-aureis; elytris læte subviridi-aureis, vitta lata suturali pone medium valde dilatata nigro-ænea, ut in O. gloriola inæqualibus, apice rotundato, angulo suturali fortiter dentato, subtilius punctatis, punctis ante apicem densioribus, plagis duabus minoribus lævibus, maculis albis tribus conspicuis, quartaque parva sub humero, minori; corpore subtus femoribusque viridi-æneis, abdomine aurato.* Long. 7 lin.

♀. *O. gloriolæ eodem sexû affinis, differt colore suprâ clare olivacea, nitore sub-opalescenti induta, labro nigro, testaceo-bimaculato; collo multo angustiore, palporum articulo ultimo tantùm nigro, elytrorum macula sub humero haud deficienti; corpore subtus æneo-splendido, femoribus viridibus.* Long. 7 lin.

I have seen about six examples of each sex. The colour of the palpi is evidently a variable character in this group, and I do not lay much stress upon it, but the totally different shape of the head in both sexes, the colour and the pale humeral spot of the ♀ are important. The punctuation of the elytra is finer than in *O. gloriola*.

OXYGONIA BUCKLEYI, *sp. n.*

♂. *O. gloriolæ colore simillima, differt elytris conspicue longioribus, labro cupreo splendido; elytris eodem modo sculptis et pictis; corpore subtus cupreo-aureo splendido.* Long. 7½ lin.; elytror. 5 lin.

♀. *O. gloriolæ eodem sexû similis, at longior, viridi-ænea, labro splendide viridi-æneo, antennarumque articulis 1 et 3—4 ad apicem metallicis.* Long. 7½ lin.

The metallic labrum is constant in both sexes throughout the numerous series of this species that I have examined; but it is quite easy to distinguish it by the form of the body alone; *O. Buckleyi* being much more elongated than in the other two (more conspicuously so in the ♂), and having a broader and more convex neck, which causes the eyes to appear less prominent: there is the same sexual difference as in *O. gloriola* with regard to the humeral spot. The males of *O. Buckleyi* are less glittering in colour than those of *O. gloriola*.

OXYGONIA MORONENSIS, sp. n.

♂ ♀. *Fusco-ænea, labro palpisque nigris; thorace cylindrico, lateribus rectis, conspicue transversim strigoso; elytris ♂ ad apicem subito depresso-explanatis, oblique angustatis, angulo suturali longe producto, apice distincte dentato, ♀ sub-obtuse rotundatis, sutura fortiter oblique dentata; supra grossius æqualiter punctatis, plaga discoidali unica pone medium lævi, utrinque maculis marginalibus tribus (quarum prima parva, 2^{nda} transversa, linearis), ♂ macula parva sub humero; corpore subtus fusco-cupreo, femoribus æneis.* Long. $7\frac{1}{2}$ —8 lin. ♂ ♀.

Many examples. R. Upano, Equador (Buckley).

The elytra are not singly produced at the apex in the ♂ (i. e., strongly dehiscent at the suture), the apical spines or teeth being contiguous, thus differing from *O. Schænherrii* and *O. albitænia*.

OXYGONIA CARISSIMA, sp. n.

♂. *Suprà olivaceo-viridi-ænea, elytris vitta lata laterali crocea, a baseos medio usque ad suturam extensa, pone medium valde dentata, juxta humeros paulo angustata, ornatis; capite rubro-cupreo tincto; labro flavo-testaceo, dente et marginibus fuscis, palpis fuscis ad basin pallidis; thorace lateribus conspicue rotundatis, suprà subtiliter strigoso et alutaceo; elytris minus inæqualibus, apice paululum depresso-explanatis, obtuse rotundatis, ad suturam haud productis sed breviter spinosis, suprà æqualiter fortiter sub-dense punctatis; corpore subtus femoribusque viridi-æneis, pectore medio trochanteribusque rufo-testaceis.* Long. $6\frac{1}{2}$ lin.

Found by Mr. Buckley in the forest in the Macas district; one example.

OXYGONIA ANNULIPES, sp. n.

♂. *Suprà viridi-olivacea, obscura, elytris vitta angusta laterali flava humeros ambienti, prope apicem in maculam elongatam dilatata et pone medium fasciolam obliquam albam emittenti, ornatis; capite rubro-cupreo tincto, labro testaceo, marginibus fuscis, dente valde elongato, palpis nigris ad basin pallidis; thorace crebre subtiliter strigoso, disco cupreo; elytris apice paululum depresso-explanatis, obtuse rotundatis, ad suturam haud productis sed breviter spinosis, suprà æqualiter fortiter sub-dense punctatis; corpore subtus viridi-æneo, prothorace trochanteribus, femorumque annulo lato, rufis.* Long. 6 lin.

Macas district. One example (Buckley).

Kentish Town: February, 1872.

NOTES ON SOME CORSICAN INSECTS,

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(Continued from Vol. vii, p. 250.)

[WITH DESCRIPTIONS OF NEW GENERA AND SPECIES OF *HEMIPTERA*
BY JOHN SCOTT.]

(Concluded from p. 195).

Genus.—*AGALLIASTES*, Fieb.*AGALLIASTES* *ochraceus*, Scott, *sp. n.*

Ochraceous; sometimes slightly dusky and clothed with semi-depressed black hairs.

Head pale brownish-yellow; *antennæ* yellow, first joint, except the apex and second joint at the base, black.

Thorax: *pronotum* and *scutellum* ochraceous or slightly dusky; *elytra* ochraceous or slightly dusky; *membrane* brownish, the large cell, a patch below the apex of the cuneus, and the outer margin of the cells, slightly darker; *cell-nerves* ochraceous, lesser *cell-nerves* orange-red; *sternum* ochraceous; *legs* deep yellow; *thighs*, first pair along the lower margin with four or five minute black spots, from each of which projects a long black hair, second and third pairs each with a single black spot on the lower margin a little before the apex, upper margin of all the pairs at the apex with two black spots; *tibiæ* with black spots and erect, stout, somewhat spinose, black hairs; *tarsi* pale brown, apex of the third joint broadly black.

Abdomen, underneath more or less brown; genital segments dusky ochraceous.

Length, 1—1½ line.

AGALLIASTES *unicolor*, Scott, *sp. n.*

Minute, green; clothed with semi-erect pale hairs; thighs unpunctured.

Head: *crown*, anterior margin, viewed from above, elliptic; *antennæ* brownish, basal joint green; *eyes* dark brown; *rostrum* green, apex black.

Thorax: *pronotum* and *scutellum* green, the latter with a somewhat deep and narrow, triangular depression at the base; *elytra* green; *membrane* fuscous-black, between the apex of the cuneus and the inner nerve a white triangular patch; *cell-nerves* pale; *sternum* green; *legs* green; *tibiæ* unpunctured, and with long, erect, spinose, black hairs; *tarsi* pale brown, apex of the third joint blackish.

Abdomen, underneath green.

Length, ¾ line.

This is the only *green* species of the genus with which I am acquainted. The insects are not in good condition, and, besides, have faded much in colour.

Family *SALDIDÆ*.Genus *SALDA*, Fab.*SALDA* *venustula*, Scott, *sp. n.*

Black, somewhat sparingly clothed with erect, fine black hairs.

Antennæ : 3rd and 4th joints very thick, the latter with an oval, white patch on the inside. *Pronotum* and *scutellum* shining, somewhat metallic. *Corium* at the base with a triangular, whitish-yellow spot; and at the apex with a large, almost round, white spot. *Legs* yellow.

Head clothed with short, fine, golden hairs; *antennæ* black, first joint orange-brown, apical third white, second clear brown, base very narrowly and apical third black, third and fourth black, the latter with an oval, white patch on the inside; *eyes* black, shining; *rostrum* brown, apex black.

Thorax : *pronotum* black, shining, with a bronzy or metallic lustre, sides concave, disc with a deep transverse channel nearly in the middle, anterior portion convex, and with a small fovea in the centre, posterior angles slightly thickened and raised; *scutellum* convex, black, shining, with a bronzy or metallic lustre, the basal depression somewhat semi-circular and finely punctured; *elytra* velvety-black; *clavus* clothed with extremely short, deep, golden hairs; near the base, a small, almost round, orange-yellow spot, and another in a line with the scutellar angle; *corium* pale fuscous-yellow, with a slightly darker transverse band not reaching to the anterior margin, its upper edge in a line with the apex of the scutellum; extreme edge of the anterior margin and central nerve black, interior margin broadly black; beyond the middle a large comma-shaped, velvety-black patch, extending to the anterior margin, near the centre of which is a small, orange-yellow spot; next the apex, a large, almost round, white spot, and at the base, a triangular, whitish-yellow one; posterior margin narrowly fuscous; *membrane* yellow, interior margin and nerves black, base and exterior margin of the nerves bordered with fuscous-black; before the apex an almost oval white spot; *sternum* black; *legs* clear brown; *coxae* and basal half of the thighs, white; *tibiae* pale brown, apex narrowly black, with a few semi-erect, long, black, stout hairs; *tarsi* pale brown, third joint at the apex black.

Abdomen black.

Length $1\frac{1}{2}$ line.

This handsome species belongs to the *elegantula* and *Flori* section of the genus. Its prominent, distinctive characters are the oval, white patch on the antennæ, the large white spot at the apex of the corium, and the large, comma-shaped, black patch above the latter, extending to the anterior margin.

The description has been made from a single example.

Family.—NOTONECTIDÆ.

Genus.—ANTIPALOCORIS,* Scott, *g. n.*

Somewhat linear, fusiform.

Head : crown narrow, not produced in front as in *Anisops*; *antennæ* four-jointed, first joint short, second large, somewhat oval, flattened on the sides, third minute, fourth elongate, as long as the second and third together, narrow, somewhat lunate; *eyes* very large, curved with the head, viewed from above

* *Antipalos*, a rival; *koris*, a bug.

somewhat rhomboidal, with rounded angles, touching each other at the inner basal angle, from the side triangular, upper and under margin convex, apex rounded, posterior margin ζ -shaped; *rostrum* stout, four-jointed, reaching to between the first pair of coxæ, first joint covered by the triangular labrum.

Thorax: *pronotum* short, posterior margin slightly concave across the scutellum; *scutellum* long, triangular, pointed, sides concave; *elytra* convex, without a clavus or membrane; *embolium* narrow, nearly as long as the corium; *wings*, none; *sternum* long, sides densely clothed with fine, long, appressed hairs; *prosternum* short; *meso-sternum* transverse, anterior margin in the middle with a callus, sides reflexed, xyphus rounded, apex considerably depressed; *meta-sternum* long, posterior margin in the middle triangular; *legs*, first and second pairs short, third very long; *tibiæ*, first pair at the apex with two short spines, lower margin with a few long, semi-erect, stout, spinose hairs; *tarsi*, first and second pairs with the first joint twice as long as the second; *claws*, two, on the first and second pairs sub-equal, on the third minute; *thighs*, *tibiæ*, and *tarsi* of the third pair of legs of almost equal length.

Very closely allied to the genus *Anisops*, from which it differs in not having the crown elongated nor the eyes separate, and in the not decidedly different proportions of the various parts of the hind legs.

ANTIPALOCORIS MARSHALLI, Scott, *sp. n.*

Very pale green, shining, after death almost white; *elytra* with anterior margin black.

Head: *crown* and *face* brown or green, below the base of the forehead an almost round depression extending to the inner margin of the eyes; *antennæ* pale green, second joint clothed with long brownish hairs, fourth joint clothed with short silvery ones, having besides a long fringe of the same along the convex margin; *eyes* large, dark brown; *labrum* piceous; *rostrum*, third and fourth joints black.

Thorax: *pronotum* short, shining, unpunctured; *scutellum* long, triangular; *elytra* pale green, almost white; *corium*, next the embolium with an elongate black streak at the base and another in the middle, connected by the black nerve, apex with a black patch; *embolium*, for about two-thirds the length of the corium, black; anterior marginal nerve more or less green; *sternum* yellowish or greenish, sides thickly covered with very long, fine, black hairs; *legs* green; *coxæ* of all the pairs brownish-yellow; *thighs*, first and second pairs pitchy-black, apex broadly green; *tibiæ* and *tarsi* green; *claws* black; third pair of thighs green, extreme base and apex on the inside piceous; *tibiæ* green, inner margin broadly black; *tarsi* green, inner margin black and with a dense fringe of short black hairs.

Abdomen, above green, genital segments brown; underneath green, base and genital segments fuscous or black.

Length, 2—2½ lines. Length of hinder legs, 3—3½ lines.

Several specimens were taken at the mouth of the Gravone river, in company with *Anisops niveus*.

Linares, Provincia de Jaen, Spain: December, 1871.

DESCRIPTION OF A NEW SPECIES OF *SERICORIS* FROM BRITAIN.

BY C. G. BARRETT.

SERICORIS DOUBLEDAYANA, *sp. n.*

Top of head and antennæ brown, face and palpi drab. Fore-wings short and broad, with rounded costa and truncate hind-margin, glossy, pale grey with a reddish tinge, markings rich chocolate-brown or umbre-colored. Basal patch distinct, its outer edge oblique from near the base of the costa to the sub-costal vein, thence nearly perpendicular to the dorsal margin. Central fascia entire, its inner margin parallel with the outer edge of the basal patch (the contained pale fascia being therefore of *equal* breadth throughout, and also divided by a delicate brown line): the outer margin of the central fascia forms two pointed projections or teeth, both of which point obliquely upwards. On the dorsal margin of the wing, near the anal angle, is an upright, conical spot, and the apical portion of the wing is of the same dark colour, cut up into spots by delicate, pale lines proceeding from the usual costal geminations. Hind-wings pale grey, paler towards the base.

Female fully as large as the male, pale *silvery*-grey, with the markings rich dark brown, and the hind-wings dark grey.

Apparently only variable to a slight extent in colour, the markings exceedingly constant and well-defined.

Allied to *cespitana*, but distinguished from it by the form of the wings, which are short and truncate; while in that species they are narrow, with a straighter costa and slightly produced tip. In *cespitana* also, as in *conchana*, *micana*, &c., the female is much smaller than the male, and, in the best marked specimens of this most variable species, the markings never seem so sharply defined as in *Doubledayana*, nor is the pale fascia, before the middle, so narrow nor so regular in form.

Habitat, Ranworth fen, in July. Probably also Wicken and other fens.

I have taken especial pains to point out the distinctions between this and *cespitana*, because I find that it has been confounded with that species both in this country and on the Continent. Professor Zeller writes "we think this a smaller, livelier var. of *cespitana*;" and Mr. Doubleday tells me that he has it as a variety of the same species. I regret to differ from such eminent authorities; but I have taken this species in some plenty in its fenny haunts, and never found a *cespitana* or anything like it among them; while I have also taken the *dark* forms of the latter species rather commonly at Brandon on the "Buck" sand, and all sorts of queer varieties on the slopes of the Hill of Howth and the limestone of Galway, and am firmly convinced that the two are *totally distinct* as species.

The history of *Doubledayana* is replete with misapprehensions. I first met with it at the end of July, 1869, when with the Hon. Thos. de Grey at Ranworth Fen, and he recognised it at once as a species which he had taken in the fens of Cambridgeshire, but called it *abscissana*; but as he (now Lord Walsingham) is collecting somewhere on the western slopes of the Rocky mountains, I cannot at present ascertain whether his Cambridgeshire specimens are this species or true *abscissana* (*fuliginea*, Haworth), which is about the same size. Being at that time quite unacquainted with *abscissana*, I put specimens into my collection as that species without hesitation; and, last summer, being able to visit Ranworth occasionally, kept a sharp look out for the species, and, during the month of July, took a good number. Of these I afterwards sent series to various friends under that name; but Mr. Machin noticed the error, and very kindly sent specimens, as also did Mr. Bond, of the true *abscissana* for comparison. That species being whitish, with straight, ill-defined dark fasciæ, bears little resemblance to *Doubledayana*.

It gives me particular pleasure to name this novelty in honour of my kind friend Mr. Doubleday, who has spent so many years in elucidating the history and clearing up the nomenclature of our native *Lepidoptera*.

Norwich: 12th February, 1872.

Note on three new British species of Homalota.—I have recently been able to determine as British the following three species of *Homalota*, not included in the revision of that genus published by me two or three years ago.

1. *H. difficilis*, Bris.—Near *H. vilis*, but smaller, with shorter thorax, and paler antennæ. Taken by Mr. Crotch and also by Mr. Champion (I have no locality from either).
2. *H. humeralis*, Kr.—Very near *H. sodalis*, but smaller, with paler elytra and antennæ, and different ♂ characters. Taken by Prof. McNab, at Cirencester.
3. *H. fimorum*, Bris.—Very near *H. cinnamoptera*, but smaller, darker, rather more sparingly punctured, and with shorter antennæ. Taken by Mr. Crotch (I think, in Norfolk).

—D. SHARP, Eccles, Thornhill, Dumfries, February, 1872.

Note on the occurrence near London of Homalota atrata, a species new to the British list.—I have recently taken, in a marshy place near Lee, five examples of a *Homalota* unknown to me, and which Dr. Sharp has determined to be *H. atrata*, Mann.; Ktz., Ins. Deutschl., ii, 285 (*clancula*, Er.). It appears to be most nearly allied to *H. gagatina*; and, compared with that species, is rather smaller, shorter and broader, with its abdomen thickly and finely punctured all over the upper surface. Its short and compact form somewhat simulates *Gyrophæna*; and it is not in general *facies* unlike a very small specimen of *Oxyptoda lentula*, with which it occurs.—G. C. CHAMPION, 274, Walworth Road, S.E., February, 1872.

Note on the occurrence in Great Britain of Melœ cyaneus, Muls.—I possess a ♀ specimen of a *Melœ*, recently given to me by the Rev. R. P. Murray (who took it last year in the Isle of Man), and which I think must be referred to the *M. cyaneus* of Mulsant (Col. de France, Vésicants, p. 47);—with European specimens of which in the British Museum collection it agrees tolerably well in all essential points. From Mulsant's description, *M. cyaneus* is usually smaller than *M. proscarabœus*, with a purplish-violet metallic head and thorax, the punctures of which are not so coarse, the base of the thorax feebly emarginate at most, a more or less evident longitudinal depression on the thoracic medial line behind the middle, and less rugose elytra. The thorax itself, according to Mulsant, "*semble un peu plus long que large*;" but in this Manx specimen it is decidedly quadrate: otherwise, the insect accords well with the description of *cyaneus*; and its brightly metallic (in some lights slightly coppery) and remotely punctured head and thorax, and the broad and very evident basal longitudinal channel of the latter segment, give it quite a different facies from the bluest specimens of *proscarabœus*.

From *M. violaceus*, its decidedly shorter thorax (of which the base is not nearly so deeply emarginate, and has no transverse channel), black elytra and body, and more metallic head and thorax, at once distinguish it.

There seems some slight doubt as to *M. cyaneus* being held as thoroughly distinct from *proscarabœus*: but, however that may be, this Manx insect, which is apparently an extreme of the former, is certainly not to be reconciled with any *proscarabœus*; and its structure prevents its being confused with any other of our species.—E. C. RYE, 10, Lower Park Field, Putney, S.W.: February, 1872.

Note on the capture of Nitidula flexuosa.—As I believe this species is to some extent looked upon as doubtfully indigenous, I may note that I beat it in the spring of 1871 out of some rams' horns, collected from the butchers here during the preceding summer, and laid in a yard near a bone mill. These horns still remained *in statu quo* the last time I was at this place, and I again found the beetle.—ROBERT LAWSON, 58, St. Thomas Street, Scarborough: January, 1872.

Note of recent capture of Platydema violacea, Fab.—Looking over some coleopterous odds-and-ends belonging to my friend Mr. James Allen, I found, amongst some New Forest captures, two specimens of this somewhat scarce insect, taken last July, from a decayed bough of oak. The late Charles Turner, I believe, found several of this species in a similar situation.

Through the kindness of the captor, one of the specimens now serves to fill a gap left in my collection for that species.—JOHN GEO. MARSH, The Sycamores, 842, Old Kent Road, S.E., February, 1872.

Natural History of Leucania straminea.—After waiting many years, I have at length had the satisfaction of figuring the larvæ of this species, and breeding the moths; and now have the pleasure of offering some account of the larva, and returning my thanks to the three friends who have helped me, viz., to Mr. Howard Vaughan, for the first examples, June 21st, and July 5th, 1870, and again in June, 1871; secondly to Mr. Charles G. Barrett, for larvæ in April and May; and thirdly to Mr. Henry Laver, in June, 1871.

The chief food of the larva consists of the leaves of Arundo phragmites, though

it will eat, and is sometimes found on, *Phalaris arundinacea*, as well as on other coarse grasses growing amongst reeds in wet places; it remains on its food-plant and hides itself by day under and amongst the mingled leaves, and comes forth at night to feed; from the structure of the abdominal legs, and their terminal discs, it is enabled to obtain a firm footing on the smooth surfaces of the reed stems and leaves, without any danger of being blown off, or falling into the water over which it must be often moving.

The habits of the rest of the genus lead me to suppose that the larva is hatched in autumn, and hibernates whilst yet small; I have had individuals no more than half-an-inch long sent me at various dates from the end of April to the beginning of June, the growth of the reeds probably influencing the rate of their development, but I found that, when once they had begun to feed, they took about five weeks to attain full growth; ichneumonated larvæ lingered on longer, up to the time of the appearance of the first specimens of the imago.

The larva in its immature state, when half-an-inch long, is very slender, of a dull greyish-brown colour, with an almost blackish dorsal line, and several faint lines along the sides, by the arrangement of which one identifies it readily enough as a true *Leucania*; afterwards, at each moult, it becomes a little paler and brighter coloured, its pattern of longitudinal lines and stripes remaining relatively the same.

When full-grown it measures $1\frac{1}{2}$ to $1\frac{1}{4}$ inches in length, slender and tapering a little at each end, especially towards the head, which is the smallest segment; it is tolerably cylindrical, the abdominal legs are rather long and well developed, the extremity of each furnished with a circlet of sharp hooks, the anal pair being usually extended behind in the line of the body, and the others often appearing a little sprawling according to the exigence of position; the head is slightly flattened above, and the antennal papillæ are well developed, projecting forwards in line with the head and body; the skin is remarkably smooth, the segmental divisions being scarcely indicated, chiefly in fact, by fine wrinkles forming themselves when the larva bends itself round, in the graceful postures it assumes, when actively engaged in feeding.

The ground colour of the back and sides is brownish-ochreous, but, with the exception of a stripe on either side the back, and another again lower down, this is thickly covered with minute, wavy, linear, greyish freckles; the dorsal line is of dark grey, sometimes blackish grey, having a fine central pale thread; the sub-dorsal line is similar to the dorsal, but rather paler, both in the central thread and in its lines of grey edging; the second stripe of the ground colour follows; then another pale line with dark edges, precisely similar to the sub-dorsal, though rather pale ochreous in tint; below this comes a broad stripe of the freckled ground colour, marked the strongest along its upper and lower edges, and so little freckled along its middle region as sometimes to give a line of the plain ground colour there; the spiracles are along the lower freckled edge, they are whitish-grey, faintly outlined with black; the sub-spiracular stripe is pale ochreous and paler still at its edges, the belly and legs being of the same colour but a trifle deeper in tint; the tips of the ventral legs are dark brown; the head is brownish-ochreous, brown at the mouth and shining, as is also the upper surface of the second segment. I have distinguished all these markings as well as I could, but in truth, the whole surface

is so much of the same depth and colouring, especially on the back and sides, as to produce a very soft uniform appearance; even the tubercular dots appear wanting, though really they are present, and even black in colour, but then they are so minute as not to be noticed without a lens.

When full-fed, the larva bends down a leaf of the reed, or fastens two or more leaves together, and there spins a slight and rather open worked cocoon of greyish silk, the upper surface flattened, within which it changes to a pupa. The perfect insects appeared between the 7th of July and 9th of August.

To give some notion of the extent to which this species suffers from parasites, chiefly small ichneumons, though sometimes dipterous, I may mention, that of twenty specimens sent me by Mr. Vaughan not one had escaped being stung; and from those he retained for himself, he succeeded in rearing but one moth.—WM. BUCKLER, Emsworth, November, 1871.

Captures of Lepidoptera near Lewes.—March 22nd, *T. rubricosa* on willows. *X. lithorhiza* commonly, flying after dark.—24th, *H. croceago*, 2 or 3 on willows.—28th, *T. miniosa*, 1 on willow.—30th, *H. croceago* and *T. miniosa*, 1 or 2 of each. *T. piniperda* (2) on willows.

April 4th, *T. miniosa* on willows rather commonly; also 1 or 2 *H. croceago*. Took a ♂ *T. stabilis* in cop. with ♀ *T. gothica*. I obtained ova and reared the larvae, which are now in the pupa state.—12th, *L. polyommata*, one, on a hedge.

May 6th, *S. dubitata* and *E. alchemillata* at dusk.

June 2nd, *L. sinapis* (2). *M. Athalia* commonly. *C. plantaginis*. *S. estersaria* several. *M. notata* (1). *Aspilates strigularia* (2). *M. hastata* commonly. *E. fuscula*, *E. octomaculalis*, *B. arcuana*, *Adela DeGeerella*, &c.—June 15th, *P. Geryon* several. *P. globularis* scarce. *Pterophorus tetradactylus*.—28th, *A. tincta* one at sugar.—29th, *C. porcellus* one bred.

July 6th, *H. derivalis* at dusk. *A. ligustri* at sugar.—14th, *C. ligniperda*, ♀, flying round sugar. *T. fimbria* several bred.—17th, *Eubolia lineolata*, one. *D. galii* one, bred by a friend from a larva found last year.—20th, *N. camelina* at dusk. *A. ligustri* on sugar.

August 8th, *B. glandifera* at rest.—16th, *G. obscurata* commonly. *C. Edusa*, 2 seen.

September 11th, *A. australis* (1) very scarce this year.—14th, *S. convolvuli*, a battered specimen brought.

October 3rd, *P. empyrea* on sugar and ivy-bloom. *A. saucia* one.—28th, *Cerastis erythrocephala* one at sugar. *H. croceago* one on sugar. *A. pyramidea* and *Hadena protea* still in good condition: surely very late?

November 2nd, *H. croceago*, *C. miata*, and *X. rhizolitha* at sugar. *A. aprilina* in good condition, and very abundant.

December 13th, *Plusia gamma*, a specimen brought.—J. H. A. JENNER, Lewes, January 13th, 1872.

Notes on species of Tineina feeding upon Fungi.—It is never possible to say what piece of good luck one may meet with by going a little farther. I thought that I had made the acquaintance of every species of moth that was in the habit of frequenting a large chalk pit which has been a favourite collecting ground of mine for the last three seasons; but, one afternoon last July, I happened to walk over to a

large oak tree in a field not a hundred yards from the pit, and there found several *Tinea misella* running on the trunk before their evening's flight. Their home was evidently in some cavity in the trunk opening between the large main roots, and very hard it was to secure the swift-footed little moths before they could make their escape into it. Doubtless, some fungus was growing in the cavity which served them for food; and there was evidently no scarcity, for the moths were to be found about the tree for the next fortnight.

Among them were several specimens (chiefly males) of a yellowish colour (a sort of Albino form to which several species of *Tinea* seem liable, notably *rusticella* and *ferruginella*); and, taking this into account, it will easily be believed that I had some difficulty in realizing that this was the same species that I had last seen ten years before in the spirit vaults at Dublin, on the wonderful "blankets" of fungus with which their walls are lined.

Another old Dublin acquaintance turned up in August,—a specimen of *Oino-phila v-flava*, running among some papers in a public-house. On examining the vaults of the brewer to whom the house belonged, I found dead specimens in the spiders' webs, but not in any numbers. A woody fungus growing in one of the vaults produced only *Tinea fuscipunctella*.—CHAS. G. BARRÉTT, Norwich, 16th January, 1872.

Notes on Mimicry.—The subject of mimetic resemblances is one of so much importance, that a few words from an entomologist who knows little of it, except as it is seen in Great Britain, may yet prove of some interest.

As far as insects are concerned, mimicry must be considered under two distinct heads; mimicry in the imago, and mimicry in the antecedent states.

Mimicry in the imago again naturally divides itself into three classes, namely:

1. The simple imitation of inanimate objects.
2. The imitation of objects dependent on animal life.
3. The imitation of living beings.

Examples of the first class abound amongst our *Lepidoptera* especially,—from the simple white *Acidalia* on the chalk cliffs, to the *Noctua* with its shut wings closely resembling the grey stone or tree trunk on which it sits. Of course the *Mantida* of the tropics show this more perfectly; yet the protective reason for the existence of this group is proved as clearly by innumerable British species.

The second group is best separated from the first, because it is reasonable to suppose that they did not exist until after the birth of the animals on whose existence their mimicry depends. For example, no entomologist could deny the close resemblance between *Otilia spinula*, *Abraxas ulmata*, or *Eudryas grata* and the excrement of a bird; it seems a just inference that these species were not called into life until after small, flying, and probably insectivorous birds already existed.

The third class is perhaps of the highest interest of all; here we find one insect under some peculiar protection, and others imitating its form, though not possessing its endowments. The *Heliconia* and *Danaides* of warmer countries are in England represented by bees and wasps, whose stings give protection to themselves, and indirectly, through mimicry, to other insects also. It would be curious to reckon up how many insects in England mimic the wasps and their allies, sometimes, as in the indolent *Trochilia*, the protection seems needful enough; at other

times, as in the clear-winged *Macroglossæ* and the active *Syrphidæ*, it seems to us superfluous: again, it is present in some parasites, as the *Vollucellæ*, whereas in others, as in the *Myopæ*, the *Nomadæ*, and the gaily coloured *Chrysidæ*, it is completely absent. These "negative instances" are certainly subjects for thought.

Examples of repetition, as they may be termed, are not rare: these are only pseudo-mimetic; they are, however, worthy of a passing notice. They exist in insects widely differing from each other, or in closely allied species; as illustrations where the insects are clearly not related, the genera *Crambus* and *Pleurota* may be taken, the resemblance of such moths as *Pleurota Schlägeriella* and *Pleurota aristella* to species of the genus *Crambus* is certainly remarkable. It is a curious coincidence, that all the three European butterflies which haunt the oak, namely, *Thecla quercus*, *Aurotis roboris*, and *Apatura Iris*, should have the same colouring, or nearly so; but the strangest example of repetition that ever fell under my notice is a small *Gelechia* (from Texas, I believe), shewn to me by Mr. Stainton, which has the markings and colours of *Noctua c-nigrum*. Repetition in very closely allied species is perhaps not so wonderful; and yet, when thought of in all its aspects, the co-existence of such species as *Vanessa polychloros* and *V. wanthomelas*, *Pamphila Thaumias* and *P. lineola*, *Harpella Geoffroyella* and *H. Staintonella*, *Dasycera Olivella*, *intermediella*, and *imitatrix*, is indeed more than passing strange.

It certainly does not render the subject of mimicry more easy, when it is remembered that the same protective influence is given to antecedent states of the insect.

The mimetic resemblances of larvæ may be divided exactly as those of the imago: we have the imitation of inanimate objects shown by the simple green caterpillars resembling the leaves on which they feed, but far more markedly in the close copy which some larvæ present of twigs or stems: none show this better than the larvæ of *Ourapteryx sambucaria* and *Rumia crategata*.

Of the second class, I only know one native larva,* which has ever created such a disgust in my mind by its soft, shiny excrementitious look, that, to my shame be it spoken, it has never been reared by me. It belongs to the *Tenthredinidæ*, and lives on hawthorn, and is not rare in autumn feeding in a slovenly manner on the epidermis of the leaf, living exposed on the upper surface; it is a grey-brown larva, with the first few segments as it were swollen, and, as before said, closely resembling the soft excrement of some birds.

Of the third group, the larva of *Allantus scrophulariæ* is a good example: the resemblance between its colour and that of the larva of *Cucullia verbasci* is most striking, and when found, as they often are, upon the same plant, cannot fail to impress itself at once on the person who sees them; curiously enough, both larvæ have the power of ejecting a most disagreeable yellowish-green saliva from their mouths, so that it is difficult to say which is the protector, and which the protected mimic.

Repetition exists among larvæ as in perfect insects without mimicry; a very good illustration is again given by a *Tenthredinous* larva found not rarely on the alder: it is onisciform, and I have known it more than once mistaken by naturalists for the larva of a *Thecla* or *Lycæna*.

Artificial mimicry is frequent amongst larvæ: in these, a case or covering is formed by themselves for their protection, this case resembling other objects around them: thus the cases of many *Coleophoræ* resemble the seeds of the plants

* *Blennocampa æthiops*, Fab., according to Hartig.—Edb.

on which they feed; other examples are given in the *Psychidæ* and in the *Phryganidæ*, these two last being instances of repetition also. Some *Geometræ*, as *Phorodesma bajularia* and *P. smaragdaria* have this same protective instinct.

Mimicry confined to one sex is rare in British insects,—the female *Pezomachus*, perhaps, giving an example of this; mere repetition in the female only, occurs in *Lycæna Corydon* and *Lycæna Adonis*.

This slight sketch of mimetic instances is intended to direct attention to the subject, in the hope that some entomologist may give a more complete essay on it.

Before concluding this notice, I would just add, that mimicry is not confined to insects,—the colouring of beasts, birds, and especially of reptiles, all illustrate it: again, the genus *Heliconia* itself is not better imitated than is the autumnal orocrus (*Crocus nudiflorus*) by the poisonous *Colchicum autumnale*; nay, we even find excellent examples of mimicry in inanimate things, such as many isomorphous salts: for example, the harmless tribasic phosphates and the poisonous arseniates. All these considerations make the subject a most difficult one, yet, perhaps, on that very account more worthy of study.—R. C. R. JORDAN, 35, Harborne Road, Birmingham: February, 1872.

Anagrams and Nonsense-names in scientific nomenclature.—In the recently-issued Record of Zoological Literature for 1870 (to which I hope all the readers of this Magazine are or will become Subscribers, for Entomology obtains the lion's share of the volume), I find at p. 269 the following:—"Rhyxabis [qu. *Ryaabis*, anagram of *Bryaxis* ?], Westw., Tr. E. Soc. 1870, p. 131." On reference to the "Tr. E. Soc." it will be found that the name is there given as *Ryxabis*, not *Rhyxabis*.^{*} But if my learned friend the Recorder is wrong in his citation, he is right in his conjecture.

Doubtless, *Ryxabis* is an anagram of *Bryaxis*, just as the preceding genera *Sintectes* and *Phalepsus* are anagrams of *Ctenistes* and *Pselaphus*. *Apropos* of this *Ptinus-Tipnus-Niptus-Nitpus*-ism, I quote the following from the Rules for Zoological Nomenclature approved by the British Association in 1842.

"Nonsense names.—Some authors, having found difficulty in selecting generic names which have not been used before, have adopted the plan of coining words at random, without any derivation or meaning whatever. The following are examples: *Viralva*, *Xema*, *Azeca*, *Assiminia*, *Quedius*, *Spisula*. To the same class we may refer anagrams of other generic names, as *Dacelo* and *Cedola* of *Alcedo*, *Zaporna* of *Porzana*, &c. Such verbal trifling as this is in very bad taste, and is especially calculated to bring the science into contempt. It finds no precedent in the Augustan age of Latin, but can be compared only to the puerile quibblings of the middle ages. It is contrary to the genius of all languages, which appear never to produce new words by spontaneous generation, but always to derive them from some other source, however distant or obscure. And it is peculiarly annoying to the etymologist, who, after seeking in vain through the vast storehouses of human language for the parentage of such words, discovers at last that he has been pursuing an *ignis fatuus*."

^{*} *Mea maxima culpa*! My pen, I suppose, was so accustomed to the more correct *Rhynchites*, *Rhinomaer*, *Rhizophagus*, *Rhipidolphorus*, &c., that it led me into this error. I may here notice another grievous mistake, lately pointed out to me, in my portion of the "Zoological Record." I have, among my very numerous quotations of Thomson's name, wrongfully, on one occasion, allowed the printer to caricature that learned Swede by the name of "Thompson."—W.D. & "P."—E. C. R.

Amongst the signatures appended to these Rules and Recommendations, the last, but not the least honoured, is "J. O. Westwood."

Whilst on the subject of nonsense-names, may I enquire what specific malady has attacked our nomenclators? In glancing cursorily for a few moments over the aforesaid Zool. Record, I have fallen upon a *Pleocoma staff*, a *Hesperia poweshiek*, and a *Noctua hatney*! When *Amphionycha Knownothing* was wisely abandoned by its author, I did hope that the day had gone by when a *Pleocoma staff* would have been possible.—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn, January, 1872.

Upon the relations between generic and specific names.—In Mr. Dunning's remarks on the recently published Catalogue of British Aculeate Hymenoptera there is a point incidentally alluded to, on which I would like to say a word or two. It is, the necessary agreement in gender of specific and generic name when applied to the same object. Of course, there can be no question but that, when a naturalist names a species for the first time, he should make the specific name accord in gender with the generic name. But the question whether, when a masculine specific name is changed from a masculine-named to a feminine-named genus, it should be accordingly *altered* to *suit* the generic name, is quite a different thing. After a careful consideration of this point, I have no hesitation in giving my support to Standinger's conclusion, viz., that the specific name should *not* be so changed in gender. I will briefly give my reasons for this.

The name of the species is the real basis of zoological nomenclature, and every effort should be made to get naturalists clearly to understand this. The natural course of nomenclature is this—a name is given to a species, and this name is, from the fact of its being applied to an object, a noun: it matters not that a word which is ordinarily an adjective (such as *niger*) be adopted for the purpose, the main point to be borne in mind is that, when used as a specific name, it indicates a certain definite object, and, from that very fact, is, in accordance with the rules of grammar, a noun.

The generic noun is a mere secondary affair,—a concession to human weakness; and it is a mistake to suppose that the fundamentally more important specific noun should be changeable to suit the generic noun,—this latter being really much more adjectival than the specific noun.

Mr. Dunning thinks *Lycæna Minimus* abhorrent; but I think it can be only because of some curious classical prejudices that he so considers it. Science-nomenclature should be of no particular language, its object being to supply a universal language, and it is to be of assistance for this purpose that we make use of Latin and Greek words (as being more generally known than others); but we must handle them according to the rules of universal grammar. Now, the two words "*Lycæna Minimus*" are analogous to the two words "Yew tree" (or rather "tree yew") in ordinary language. "Yew" and "tree" may be of different genders, and yet the combination be perfectly correct; so I maintain that *Lycæna* and *Minimus* in combination are perfectly correct. The comparison of *Lycæna Minimus* to "Pauline Frederic" is quite deceptive; one of the *chief* objects of the use of the word "Pauline," as applied to an individual, is to indicate its sex; and it is, therefore, of course ridiculous to conjoin with it another name contradicting it on that point. There is no meaning in "no-yes," unless as a fresh word signifying something different to either yes or no; and similarly objection is to be taken to

Pauline Frederic. But the generic name and the specific name of an object are two distinct nouns, the specific noun representing the specific qualities, the generic noun the generic qualities. Nobody objects to a masculine generic name being used in a family of which the name has a feminine termination; and I cannot see that there is any greater barbarism in *Lycæna*, *Minimus*, than in *Staphylinida*, *Staphylinus*.—D. SHARP, Eccles, Thornhill, Dumfries: *February*, 1872.

Obituary.

James Charles Dale, M.A., F.L.S. "On the 6th (February) inst., at Glanville's Wootton, JAMES CHARLES DALE, aged 80." So ran the obituary notice in the daily papers. To us, the significance of these few words is that the oldest, or nearly the oldest, British entomologist has passed away; not one who in his early years followed entomological pursuits and afterwards abandoned them, but a consistent student of Nature from his youth till his death, for letters received but a few months since proved that Mr. Dale at 80 was as enthusiastic an entomologist as he was known to be in his youth. Though latterly complaining that stiffness of the joints rendered the capture and setting of insects not so easy as it used to be, still we had no reason to expect news of his decease. To us, comparative beginners in entomology, his letters and conversation excited considerable wonderment. He was wont to talk of captures made 40 years since as of events of yesterday: to the veteran entomologist time seemed of no account. We well remember only a few years since the manner in which he related, with a perfectly boyish delight, how he had got the better of our chief Natural History Society. He became a Fellow in 1818, and compounded for his Annual Subscription; and, as this composition is based upon the principle of 10 years purchase, he had thus received its equivalent more than five times over. In his company (and he was always ready to press his hospitality upon any entomologist who might be desirous of consulting his collections), one became aware of a mingling of the past with the present to a marvellous degree. Mr. Dale was a 'British' entomologist *par excellence*, and one of the very few who devote themselves to all orders. His collections, the accumulations of his long life, are enormous, and almost every specimen is so labelled, that its exact history, whether it be of yesterday, or fifty years old, was traceable by its possessor in a moment. The notes published by himself are chiefly short, and scattered through the periodicals of nearly half a century. But it is in connection with John Curtis that the name of J. C. Dale will be handed down to generations of entomologists yet unborn. In the 'British Entomology' his name is on almost every page, and it was from his collections that Curtis derived a vast portion of the material from which his elaborate work was drawn up. The two worked hand in hand, and their names came to be considered as almost synonyms. Now that Curtis's own collection is unfortunately transported to the Antipodes, the Dalean collection is of special importance, for it enables the student in very many cases to verify Curtisian species that would be otherwise doubtful.

But for Curtis, Mr. Dale's name would probably be scarcely known beyond our own shores, for he seldom entered the arena of scientific controversy. He was emphatically an English country squire, but,—and the instances are tolerably rare—one with a taste for entomology; and of this taste he made no concealment. Only a few years since we heard from his own lips, narrated with considerable

gusto, a story of an event that befel him when he took his magisterial seat as High Sheriff of Dorsetshire. Some wag, fully aware of Mr. Dale's proclivities, let loose a swarm of butterflies in court, and, while this may have in some degree detracted from the dignity of his office, there can be no doubt that no one more heartily enjoyed the joke than did he against whom it was directed.

Mr. Dale took his first degree at Cambridge in 1815, and became M.A. in 1818. Considerably more than half a century of a life spent in entomological pursuits cannot be done justice to in the space at our disposal. We have, at the present time, no means of knowing what may become of Mr. Dale's extensive collections. He married in 1848, and leaves two sons, who possess their father's taste for entomology: it is, therefore, possible that these collections may remain in the family.

ENTOMOLOGICAL SOCIETY OF LONDON. Anniversary, 22nd January, 1872.—A. R. WALLACE, Esq., F.L.S., President, in the Chair.

The Rev. T. A. Marshall, and Messrs. H. W. Bates, A. Müller, and F. Smith were elected into the Council to replace Members retiring therefrom.

Prof. J. O. Westwood was elected President for the ensuing year; Mr. S. Stevens, Treasurer; Messrs. McLachlan and Grut, Secretaries; and Mr. Janson, Librarian.

The outgoing President read an address, for which, and for his services during the past year, a unanimous vote of thanks was tendered. The proceedings terminated with the usual vote of thanks to the other officers of the Society.

5th February, 1872.—Prof. J. O. WESTWOOD, M.A., F.L.S., President, in the Chair.

The President thanked the Society for the honour it had done him in again electing him to fill his present office; and he appointed Messrs. E. Saunders, F. Smith, and H. T. Stainton, as Vice-Presidents.

Mr. McLachlan brought before the meeting an illustration of the manner in which the ravages of Aphides are checked by Hymenopterous parasites. A twig of poplar, placed in his hands by Dr. Knaggs, was occupied by a family of plant-lice, and every individual had been attacked by a parasite (probably an *Aphidius*), so that there remained only the inflated skins, resembling eggs of some large moth, each of which presented a circular hole whence the parasite had emerged.

Mr. Druce exhibited a selection from an extensive collection of butterflies from Costa Rica formed by Dr. Van Patten. The collection included about 50 new species, among which were four of *Papilio*, three of *Morpho*, three or four of *Leptalis*, a new genus of *Satyridae*, &c., &c.

Prof. Westwood exhibited drawings and specimens of various species of *Acaridae* new to Britain. Of these the most remarkable was a *Trogulus* (*T. rufitarsis*) received from Dorsetshire, allied to *T. nepiformis* of the south of Europe. Another form pertained to the genus *Argas*, which includes the poisonous *A. persicus*; and this had been found in the crypt of Canterbury cathedral.

Mr. Bond had also obtained specimens of another species found in a church on a gentleman's coat, after two young bats had fallen upon him from the roof.

Major Parry read descriptions of various new species of exotic *Lucanidae*; and was followed by the reading of further remarks on insects of this family by Prof. Westwood and M. Snellen van Vollenhoven.

DESCRIPTION OF *WESMAËLIA CREMASTA*, A NEW BRACONID FROM GREAT BRITAIN AND SPAIN.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

Gen. *WESMAËLIA*, Först.

Verh. nat. Ver. d. pr. Rheinland, 1862, p. 235.

First cubital cell separated from the discoidal. Antennæ not clavate. First segment much elongated, linear.

The above are all the characters given by Förster for this genus, belonging to the group of *Euphorus* and *Microctonus* among the *Bracnidae*. It may be immediately recognised by the remarkably *long and slender petiole*, resembling that of *Pelopæus*, but curved. Förster's type, *W. pendula*, is undescribed, and may very likely be the same as the following species. The practice of issuing such names is of course perfectly useless, and should be discontinued.

WESMAËLIA CREMASTA, *sp. n.*

Testacea, mandibulis apice et metathorace, interdum rufis; oculis, ocellis, metathorace postice, terebræque valvulis, nigris; antennis tarsisque, apice fuscescentibus.

Long. 1½ lin. ♀.

Head large, wider than the thorax, sub-cubical, buccated; occiput hardly emarginate. Antennæ nearly as long as the body, 26-jointed, slender; the joints cylindrical near the base, becoming moniliform towards the apex. Mesothorax trilobate, gibbous, much higher than the prothorax. Scutellum slightly convex, rounded at the apex, and having a shallow transverse fovea at the base. Metathorax short, descending rather abruptly, excavated behind in the middle, rugulose, without areolets. Wings hyaline, nervures and stigma testaceous, the latter edged with brown beneath; radial cell lanceolate, larger than in the allied genera, with which the neuration in other respects agrees. First segment of the abdomen not thicker than the hind femora, as long as all the other segments together, linear, regularly curved, very slightly widened at the middle, where the spiracles are situated; segment 2 concealing all after it except the apical. Abdomen small, strongly compressed; viewed from above, linear-ovate, acuminate at both extremities, smooth, shining; viewed laterally, pyriform. Terebra short, curved upwards. Legs elongate, slender. Testaceous, the clypeus yellow, with whitish hairs; the mandibles in one specimen rufous at the apex; eyes, ocelli, and valves of the terebra, black; metathorax in one specimen rufous, black behind and at the lateral edges in both. Base of the petiole paler.

Not to be confounded with *Leiophron apicalis*, Curt., B. E., which it somewhat resembles in colours ; but the radial cell of *L. apicalis* is much smaller, and the petiole not nearly so long.

I have taken two females of this remarkable insect ; one at Bielsa in the Spanish Pyrenees, and the other (to my great surprise) in a wood in North Devonshire. The English specimen is somewhat more highly coloured, having rufous points to the mandibles, and the metathorax rufescent.

St. Albans : February, 1872.

NATURAL HISTORY OF *MELITÆA ATHALIA*.

BY W. BUCKLER.

I am indebted to the kindness of that indefatigable collector, Mr. W. H. Harwood, for the opportunity of describing the larva of this species, and also of adding to the list of its food-plants one, which I have never seen mentioned in any work.

On a warm day in last May, Mr. Harwood was sitting under a tree and discussing his lunch, when, in compliance with that curious law, which, as Mr. Stainton long ago made us observe, so intimately connects the entomologist's *al fresco* meals with interesting discoveries in insect œconomy, his attention was arrested by the movement of a dead leaf lying amongst others on the ground before him. Presently the head of a larva was protruded ; a further examination showed that its owner was engaged in eating a small plant of *Melampyrum pratense*, and was but one of a large colony similarly engaged.

In previous years, my friend had captured the imago of *Athalia* in this locality, and had been puzzled, because its generally reputed food-plants, *Plantago major* and *lanceolata*, could not be found there ; but now the secret was told : and, although I have no doubt but that, under varied conditions of locality and climate, the larva feeds on various plants, yet I cannot help thinking that, in many of the English habitats for the species, *M. pratense* must be its food. *Melampyrum sylvaticum* has, I know, been given in the list ; but, as this seems to be a rare plant in Britain, and not to be known in many places where the butterfly occurs, I am inclined to believe that a small variety of *M. pratense* may have been mistaken for it.

To the larvæ, which Mr. Harwood sent me on May 16th, I gave the choice between *Melampyrum pratense* and *Plantago lanceolata*, but found the latter quite neglected by them, even when they had finished up their supply of the former plant. On May 24th, they began to

suspend themselves to the under-sides of the leaves, and to the sides of their glass cage, and on the 27th, they had all assumed the pupa state. The perfect insects, of an unusual depth and richness of colour, and of maximum size, emerged from the 27th to 30th June.

The full-grown larva is about 1 inch in length, and moderately stout; viewed sideways, it is of about uniform bulk throughout, viewed from above, it is seen to taper slightly just towards each extremity: the head is indented on the crown, is widest at the sides near the mouth, and rather flattened in front; the body is thickly covered with obtuse, conical spines, to the number of one hundred and thirteen, as follows: the segments from the fifth to the eleventh, both inclusive, bear each eleven spines, arranged in a single transverse row on the back and sides; or, if they are regarded longitudinally and collectively, then we may say that on segments 5—11 there are eleven row of spines, viz., the dorsal, and, on each side, the sub-dorsal, supra-spiracular, sub-spiracular, lateral, and sub-lateral: the other segments have, as usual, a different arrangement; the second segment bears but two spines on each side, which are in line with the lateral and sub-lateral rows; the third segment has ten spines, the dorsal one only being absent; the fourth segment has eight spines, the lateral as well as the dorsal being absent; the twelfth segment bears ten spines, the single dorsal being here replaced by a pair, *i. e.*, one in front, the other at the hind part of the segment, whilst the lateral pair are absent; the thirteenth segment has but four spines, which stand two on each side, in line with the supra-spiracular row of the rest; of all these spines, those in the two lowest rows are the most slender and smallest, and those in the sub-dorsal are rather the largest.

The ground colour of the back is black, becoming gradually blackish-olive on the sides; the belly olive-brown, the anal flap, and also the segmental divisions, olive; all the skin is thickly covered with whitish spots, that are very slightly raised, with a tessellated appearance, except that a dorsal stripe of the black ground is left; the spots on the back are somewhat transversely oblong, but rather irregular in shape, and are disposed partly in three transverse rows between the spines of one segment and those of the next, and partly round the bases of the spines; on the sides, the spots are rounder and smaller, and are chiefly congregated round the spines and spiracles; there is a lateral series of three large irregular spots on each segment beneath the spiracles, which almost forms a broadish longitudinal stripe. The head is black, with a transverse whitish stripe just above the mouth, and a group of whitish

spots on the crown of each lobe, which, as does the rest of the head, emit fine black bristly hairs; on the front of the second segment is a narrow raised semi-circular plate of greyish flesh-colour, also emitting black bristly hairs: the colour of the spines of the dorsal and sub-dorsal rows is orange-ochreous, growing whitish at the tips, and of the dorsal rather pale at the base; those in the supra-spiracular row are of a paler ochreous tint, with more of their tips whitish; the three other rows below the spiracles are all whitish; all the spines are thickly set with straight, short, pointed black bristles at an acute angle, and for the most part each white spot on the body emits a fine, short black hair: the spiracles are black, ringed with whitish; the anterior legs black, the ventral legs of a pellucid drab colour, tipped with darker drab hooks.

The pupa is half-an-inch in length, very plump, with the usual angles much rounded off, the abdominal rings bear little rounded eminences—traces of the larval spines; the tip of the abdomen is bent back at nearly a right angle, and there is a slight depression between the abdomen and thorax, which is broad and rounded; the wing-covers are well defined and rather prominent; the warmish white colour and texture of the pupa-skin may be compared to that of biscuit china; each abdominal ring is adorned with a transverse brownish-orange bar, having on its hinder edge squarish black spots, or sometimes a black bar with orange spots, and followed by a row of tiny black dots; the back of the thorax is marked with triangular streaks of black, outlined with orange, the antennæ-cases and wing nervures are marked faintly with orange-brown, and the wing-covers and the eye- and leg-pieces with strong black blotches and dashes.

Emsworth: *March*, 1872.

DESCRIPTION OF A NEW SPECIES OF *COLEOPTERA* BELONGING TO THE
GENUS *PRIONOCALUS*, WITH NOTES ON THE OTHER SPECIES
OF THE GENUS.

BY CHAS. O. WATERHOUSE.

The characters given by Mr. Adam White for his genus *Prionocalus*, being founded upon the supposition that two male specimens received from Mexico were male and female, are in part erroneous. The apical joint of the palpi is described as being "securiform and much dilated;" this, however, only applies to the male; in the female the apical joint is elongate-triangular with the apex rounded, differing but little (except in size) from the preceding joint. The elytra do not quite cover the abdomen in the two female specimens before me; the

shoulders are not hooked in *P. Iphis*, although they project. The hind femora in the male project considerably beyond the apex of the elytra, whilst in the female they do not reach to the apex.

The three species described by Mr. White are all undeveloped males. The great development of *Pr. cacticus* is described hereafter, and presents the same differences from the minor variety as are exhibited in the larger and smaller specimens of *Pr. Buckleyi*.

The following table will serve to distinguish the species at present known :—

- A. Legs red-brown. *Pr. cacticus*.
- B. Legs pitchy-black.
 - a. Elytra strongly rugose at the base, finely granulose
at the apex *Pr. Atys*.
 - b. Elytra uniformly strongly rugose.
 - * Abdomen sparsely and not strongly punctured;
humeral angles of elytra not spinose. *Pr. Iphis*.
 - ** Abdomen somewhat thickly and very strongly
punctured; humeral angles of elytra spinose.. *Pr. Buckleyi*.

PRIONOCALUS BUCKLEYI, *sp. nov.*

Niger, sub-nitidus, fortiter rugosus; elytrorum angulis humeralibus fortiter spinosis; tibiis, tarsis, palpisque piceis; abdomine fortiter punctato.
Long. 28 lin.

Hab.: Ecuador (Yerba buena). Brit. Mus.

♂. Head quadrate, strongly rugose, with a strong tooth-like projection behind the eyes; forehead flattened, limited on each side by a ridge which runs from the base of the antennæ to the crown of the head, a very deep transverse impression in front of the base of the antennæ joined in the centre by a short longitudinal groove on the forehead, both the groove and the impression less punctured and more shining than the rest of the head; the clypeus concave, almost impunctate; labrum narrow, transverse, deeply emarginate, smooth, but with a row of punctures along the anterior margin; mandibles about equal in length to the head, bowed, deeply punctured, except at the apex; the apex of the left mandible securiform, with the dilated part preceded by a blunt tooth on the inside; right mandible acuminate, with a strong triangular tooth on the inside. Antennæ about equal in length to the body, the 1st joint large, strongly rugose, the 2nd to 7th joints sparingly but strongly punctured, the 8th to the 11th joints opaque, and longitudinally quinque-sulcate. Thorax transverse, rather more than twice as broad as long, convex, the sides strongly tri-spinose, the anterior spine the shortest; behind the third spine the sides are obliquely contracted to the base, the posterior angles prominent, dentiform; the disc is flat; the margins broadly depressed; the whole surface roughly

punctured, except the part next to the scutellum. The elytra are but little convex, much hollowed out before each humeral angle, at their greatest width rather less broad than the thorax, $1\frac{1}{2}$ times the length of the width at the shoulders, rounded at the base, broadest about the middle, gradually narrowed to the apex, where each elytron is rounded; the humeral angles are strongly reflexed, each furnished with a spine which is directed backwards; the margins are reflexed; the surface is very strongly rugose, very little less so at the apex than at the base.

The femora and tibiae are strongly punctured, more or less pitchy, especially the tibiae; the tarsi are scarcely punctured, pitchy. The abdomen is thickly and strongly punctured, the 4th and 5th segments being rugose, the latter emarginate.

A smaller specimen of the male of this species has the femora almost black, the humeral angles are less strongly spinose, and the mandibles are almost identical with those of the female. It is 18 lines in length.

♀. Head smaller, and relatively narrower than in the male, the spine behind the eyes more acute and smaller: the mandibles are a little shorter than the head, compressed, cultriform, strongly punctured, except on the inner edge; the left mandible is somewhat hatched-shaped at the apical half, and there is a small blunt tooth near the base on the inside; the apical joint of the palpi is not securiform but elongate-triangular, rounded at the apex. Antennae about the length of the elytra, with the three apical joints canaliculate. Thorax as in the male. Elytra considerably broader than the thorax, very convex, broadest rather below the middle, not much contracted towards the apex, where each elytron is very much rounded. The abdomen somewhat thickly punctured, especially at the sides (but not so much so as in the male), the fifth segment entire.

PRIONOCALUS CACICUS, White.

The British Museum has received a pair (♂ and ♀) of an insect from Peru, which I am unable to separate from *Pr. cacicus*, White, although the sizes of the two males are very different; that from Peru measuring (including the mandibles) 30 lines, whilst the type of *Pr. cacicus* is only 17 lines. The mandibles in the Peruvian insect are formed almost as in the large specimens of *Pr. Buckleyi*, but are less regularly bowed. The legs appear relatively stouter, and the elytra are less opaque.

The following is the description of the female Peruvian specimen of *Pr. cacicus* :—

Pitchy-black, sub-opaque; legs, palpi and antennae (base excepted) red-brown.

Head sub-quadrate, rather narrowed in front, with a strong acute spine on each side behind the eyes, very rugose, with a deep transverse shining impression at the front margin; a well-marked smooth ridge runs from the base of the antennae backwards to a level with the side spines, terminating in a small tubercle. Thorax transverse, twice as broad as the head at the eyes, the anterior angles prominent, acute; the sides with three strong spines, the anterior one the shortest; behind the third spine, the thorax is obliquely contracted; the posterior angles are prominent,

acute, and recurved; the surface is moderately strongly rugulose, with a longitudinal smooth ridge across the disc. The elytra rather broader than the thorax, $1\frac{1}{2}$ times the length of their width at the shoulders, broadest about the middle, not much contracted towards the apex, the apex of each elytron broadly rounded; the shoulders are rounded, recurved, furnished with a minute acute spine; at the base the elytra are strongly arched, deeply impressed on each side below the humeral angles, towards the apex flattened; the surface is moderately strongly rugose at the base, finely granular towards the apex. The legs are uniformly red-brown, moderately thickly and strongly punctured. Abdomen shining, with its sides and the whole surface of its apical segments sparingly but distinctly punctured.

Length, 22 lines.

British Museum: March, 1872.

NOTES ON CICINDELIDÆ AND CARABIDÆ, AND DESCRIPTIONS OF
NEW SPECIES (No. 14).

BY H. W. BATES, F.L.S.

OXYCHEILA NIGROÆNEA, n. sp.

Quoad formam, O. aquaticæ simillima, at tota nigra, suprâ politissima, elytris leviter æneo-tinctis; labro planato vel leviter bisulcato, nigro, nitido, dente apicali mediano magno, producto, utrinque dentibus 4 acutis armato; capite medio lævi, polito; thorace latiusculo, polito; elytris (♀) angulis humeralibus productis, sub-falcatis, maris apice breviter obtuse recte truncato, angulo suturali rotundato, fœminæ postice latioribus, apice obtusissime rotundato, ad suturam conjunctim emarginatis; suprâ politissimis, nigris, æneo-tinctis, discrete punctatis, prope basin sub-rugulosis, prope apicem lævioribus; abdomen utriusque sexûs ut in O. triste; pedibus, palpis, antennarumque articulis primis quatuor (reliquis griseo-pubescentibus) nigris, politis.

Long. 9—10 lin. ♂ ♀.

var. VARIIPES. *A typo differt tantum femorum dimidio basali piceo-vel clare rufo.*

The ♀ is remarkable for its broadened shape, with the elytra abruptly and broadly rounded at the apex without trace of truncature. The variety appears to offer no other difference from the type than the red base of the femora; the elytra in the ♂ appear rather more sinuate-truncate with the sutural angle produced, but obtuse; all gradations, however, are found between it and the type.

Many examples, taken by Mr. Buckley in the Macas district, Equador, on rocks, in the middle of streams.

OXYCHEILA GRACILLIMA, n. sp.

Parva, elongata, angustata, nigra, elytris politis; capite suprâ olivaceo; labro planato, dentibus 9 magnis acutis armato, nigro, apice testaceo; mandib-

bulis rufis, palpis flavo-testaceis; thorace angusto; elytris angulis humeralibus rectis (apice obtuso), nullo modo productis, apice (♂ ♀) late truncato, angulis omnibus breviter spinosis, suprâ passim sub-grosse punctatis, nitidis; antennarum articulis 1—2 nigris, apicibus rufis, 3 nigro, annulo mediano rufo, 4 rufo, apice nigro, reliquis pallide rufis; pedibus fulvis, coxis femorumque apicibus nigris.

Long. $5\frac{1}{2}$ — $6\frac{1}{2}$ lin. ♂ ♀.

Remarkable for its narrow, sub-parallel form and small size.

Found in the same localities as the preceding.

OXYCHEILA CHESTERTONII, n. sp.

O. aquaticæ proxime affinis formaque simillima, differt labro antennisque nigris; nigra, sub-opaca; labro quam in O. aquatica breviori, basi concava, apice obtuso, dentibus deflexis, palpis nigris; elytris apice obtusis vix truncatis, suprâ usque ad apicem punctulatis; pedibus nigris, femorum dimidio basali piceo-rufo; corpore subtus nitido.

Long. $8\frac{1}{2}$ lin. ♂ ♀.

New Granada; collected by Mr. Chesterton.

OXYCHEILA POLITA, n. sp.

O. nigroæneæ affinis, differt elytris (♂) apice depresso-explanato, productis, angustatis, obtuse truncatis, labro longissimo, albo-testaceo, etc.; nigra, politissima; labro dente mediano obtuso, palpis flavo-testaceis; elytris punctulatis; pedibus flavo-testaceis, femoribus apice late, tibiis anguste, nigris; antennis (♂) corpore longioribus, flavo-testaceis, articulis 1^o—2^o, 3ⁱⁱ—4ⁱ que apicibus, nigris.

Long. 8 lin. ♂.

One example, in Mr. Belt's collection.

Chontales, Nicaragua.

CICINDELA HISPIDULA, n. sp.

Angusta, parva, capite maximo, thorace angustissimo, cylindrico, medio leviter rotundato, antice posticeque valde constricto, thorace et elytris setis erectis elongatis dense vestitis; obscure cuprea, sub-opaca, lateribus nitidis, elytris utrinque maculis duabus sub-magnis marginalibus flavo-testaceis; labro (♀) ut in Gen. Odontocheila elongato, 7-dentato, dentibus tribus medianis productis acutis armato, flavo-testaceo; mandibulis et palpis rufo-testaceis; capite inter oculos latissimo, dense striato; thorace subtiliter transversim strigoso; elytris elongato-oblongo-ovatis, humeris rectis, ad apicem obtuse truncatis, suprâ dense sed discrete punctatis, maculis velutinis nigris variis; pedibus fulvo-testaceis, femoribus medio, tibiis et tarsorum articulis apice, fusco-cupreis; corpore subtus nigro, nitido; antennis fulvo-testaceis, apicibus fuscis.

Long. 4 lin. ♀.

This curious little *Cicindela* would belong to the section in which *C. dromioides* is placed, were it not for its elongated 7-toothed labrum.

It may probably be generically distinct from *Cicindela*, but to decide this a knowledge of the ♂ is necessary. The tarsi are all ungrooved, and the palpi moderately short and simple.

S. Brazil (Parana, or Minas Geraes); collected by Mr. Rogers.

I owe my specimen to the kindness of Mr. Edward Saunders.

CICINDELA CHALCEOLA, n. sp.

C. cribrata proxime affinis, at longior; pallide sub-aureo-ænea; labro (♀) flavo, transverso, medio paulo producto, spinaque magna mediana instructo; palpis flavis, articulis apicalibus fuscis; mandibulis ut in *C. cribrata* longissimis, gracillimis; thorace distincte transversim ruguloso; elytris apice rotundatis, angulo suturali breviter spinoso, supra crebre reticulato-punctulatis, lunula elongata humerali vix curvata et postice incrassata, lineola marginali pone medium antice et postice dilatata, macula triangulari marginali prope apicem, et notula discoidali, albis; pedibus viridi-æneis, trochanteribus femoribusque flavo-testaceis; corpore subtus cyaneo, nitido, lateribus aureo-cupreis; antennis nigris, basi cyaneis.

Long. $3\frac{1}{2}$ lin. ♀.

A larger and more robust insect than *C. cribrata*, from which it differs in colour. The white spots would appear less dissimilar if the short streak on the disc were connected by a transverse line with the short lateral vitta, and it doubtless would be so in some examples; the apical spot shows traces of prolongation into a lunule.

Interior of Northern Peru.

CICINDELA MICROTHERES, n. sp.

C. cribrata proxime affinis, forma eadem, at differt colore nigro, elytris grossius rugoso-punctatis; labro albo, transverso, medio spina unica elongata instructo; palpis albis, articulis apicalibus nigris; capite et thorace sericeo-opacis, hoc minutissime rugoso; elytris quadratis, ad apicem late obtusis, angulo suturali spinoso, supra grosse crebre punctatis, punctis in rugulas transversas hic illic conjunctas, signaturis albis ut in *C. cribrata* (sc., lunula humeralis et apicalis lineolaque lateralis pone medium antice fasciam rectam emittens); pedibus cyaneis, femoribus basi trochanteribusque flavo-testaceis; corpore subtus cyaneo-nigro; antennis nigris.

Long. 3 lin. ♂.

Macas district, Equador (Buckley)

PENTACOMIA, nov. gen.

A species closely resembling the *Odontocheilus*, taken by Mr.

Buckley in Equador, offers the peculiarity of ungrooved tarsi in all legs and in both sexes, which renders its introduction into that genus inadmissible. But it offers a further peculiarity, apparently of more importance, namely, densely pubescent soles to all five joints of the anterior tarsi of the ♂, the joints being, moreover, very slightly dilated. This last peculiarity it shares with the otherwise somewhat anomalous *Odontocheila egregia* and *Degandei*. I think it also very likely that *Cic. cupriventris*, Reiche, *Cic. Devillei*, Lucas, and *Cic. speculifera*, Brullé, agree with them in this respect. I propose, therefore, to institute a genus founded on the last-named point of structure, and to treat the sulcated tarsi as of minor importance. The previously-described *C. hispidula* may possibly belong also to the genus.

Gen. char.

Corpus cylindricum. Caput magnum, oculis maxime prominentibus. Thorax angustus, antice et postice valde constrictus. Labrum elongatum, 7-dentatum. Pedes graciles. Tarsorum ♂ articuli vix dilatati, omnes subtus densissime pubescentes, scopiformes.

PENTACOMIA CHRYSAMMA, n. sp.

P. egregiæ forma similis, at robustior; cylindrica, supra læte rubro-fusco-aurea, crebre sculpturata, subtus cyanea, lateribus cupreo-aureis splendidis; labro trapezoidali, flavo, 7-dentato, ♂ antice dentibus æqualibus parvis, ♀ dente mediano longissimo porrecto instructo; palpis flavis, ad summum apicem fuscis; antennis fulvo-testaceis, apicibus nigricantibus; thorace parte mediana breviter ovata, supra omnino creberrime grosse scabroso, margine postico transversim striato, linea dorsali inconspicua; elytris valde inæqualibus, utrinque 4-tuberosis, angulo suturali spinoso, supra densissime reticulato-punctatis, puncto laterali ab humero distante, altero discoidali longe post medium, maculisque duabus triangularibus marginalibus, quarum 1^{ma} pone medium, altera ante apicem, albis; pedibus testaceo-fulvis, femoribus tibiis tarsisque apicibus anguste nigris.

Long. 4½ lin. ♂ ♀.

This handsome insect differs in colour from all other *Cicindelidæ*, being of a rich light golden-brown; the very dense and rough sculpture and the inequalities of the elytra rendering it sub-opaque. It is closely allied to *C. cupriventris*, Reiche.

Macas district, Equador (Buckley).

I have seen about a dozen examples.

Notes on British species of Meligethes, and addition of one species to our list.—M. Ch. Brisout de Barneville having recently published a Synopsis of the 67 species of this genus known to him (L'Abeille, viii; Jan., 1872, pp. 1—36), I propose to extract a few of his remarks as to food-plants, &c., affecting most of the British species,—adding some observations on other points.

M. Brisout's paper is scarcely descriptive, being itself a detailed dichotomous table; and great stress is laid by him upon the punctuation, depressions, &c., of the under-side.

M. lumbaris, according to M. Brisout, especially frequents species of *Genista*.

M. coracinus, flowers of *Galium* and *Prunus spinosa*. I have only seen two British examples of this species; one in Mr. G. R. Waterhouse's collection, the other (from Darenth) in my own. It differs from *M. fulvipes* in its more convex build, closer punctuation, duller appearance, and darker colour, the legs and antennæ especially being almost entirely black.

M. corvinus, on *Labiaceæ*. I have only seen Mr. G. R. Waterhouse's original British type of this species: it is of the size and build of *brunnicornis*, but much more finely and closely punctured, deep shining black in colour, with broad anterior tibiae, which have the outer edge extremely finely and evenly crenulated.

M. fulvipes (sp. 6.?, Wat. Cat.), on *Genista*. I have recently observed this from the north of England.

M. subrugosus, very common in France and Germany on flowers (unique as British, in Dr. Sharp's collection).

M. symphyti, on *Symphytum officinale*. This has recently occurred to Mr. E. A. Waterhouse so far north as Ripon (*ante*, p. 38).

M. Kunzei, on *Mercurialis perennis* and *Lamium album*. I have, subsequently to my original record of this species, found it in Mr. G. C. Champion's collection, and also in that of Mr. G. R. Waterhouse (from Reigate).

M. brunnicornis, on *Lamium album*.

M. difficilis, on *Labiaceæ*, especially on *Lamium album*.

M. memnonius is apparently not known to M. Brisout. Its equivalent, *M. morosus*, not as yet recorded from Britain, frequents the same plants as *M. difficilis*. *M. morosus* and *memnonius* appear to be very closely allied; but from Mr. Waterhouse's notes hereafter mentioned, as well as from Erichson's description, it would seem that our insect is correctly ascribed to the latter.

M. viduatus, on *Salvia pratensis*, *Galeopsis*, and *Mentha aquatica*.

M. pedicularius, on *Lamium album* and *Salvia pratensis*. Appears to be not uncommon in parts of Scotland.

M. bidens, on *Trifolium medium*.

M. marrubii, on *Marrubium vulgare*.

M. serripes, on *Salvia pratensis* and *Saponaria officinalis*.

M. umbrosus, often on *Genista*.

M. maurus, on *Salvia* and *Mentha*. This species has, in my opinion, certainly not as yet been correctly recorded as British; and all the supposed exponents of it in this country that have come under my notice appear to be specifically identical with *M. ovatus* (Ent. M. M., vi, p. 288). The true *maurus* is at least of the same size as *M. umbrosus*, Stm., but of a rather less broad shape (being sub-oval instead of short sub-ovate), with its thorax rather longer and narrower, and more inclined

to parallel at the sides, and the punctuation of its upper surface not quite so close. The anterior tibiæ of *umbrosus*, moreover, are scarcely perceptibly crenulated on the outer margin until the apical third, where there are about four very small teeth, which are often almost obliterated, and of which the first and last are usually the most prominent; whereas in *maurus* the outer margin is gradually more strongly and sharply denticulated towards the apex, where the usual projecting and larger teeth are more distinct than in *umbrosus*.

Compared with *umbrosus*, the British insect hitherto considered by us as *maurus* (and which agrees well with description of *ovatus*, and with my types of the latter corroborated by M. Brisout) is, on the average, half a line smaller; much more shining, having its punctuation not nearly so close, and with its thorax certainly not longer or narrower in proportion, and its anterior tibiæ even more dilated towards the apex, and with their outer margin very coarsely and irregularly "jagged." This species varies considerably, both in size and the armature of its anterior tibiæ, and sometimes a little in the punctuation of its elytra; though not quite to such an extent as its immediate ally *flavipes*.

According to M. Brisout (and this is corroborated by the only continental type of *maurus* I have seen), *M. maurus* is rather larger than *umbrosus*.

M. incanus, Sturm. I have observed, among some unexamined specimens of British *Meliethes* belonging to Mr. G. R. Waterhouse, an individual labelled *incanus*, Stm., Er. (Ins. Deutsohl., iii, p. 190), and, in my opinion, correctly referred to that species, which is new to our list. It certainly cannot be confused with any of our recorded *Meliethes*. This specimen was taken by Mr. Waterhouse at Darenth Wood, on *Echium vulgare*, in June, 1859. It is of the size of ordinary *ovatus* (*maurus*, Wat. Cat., nec Stm.), being apparently a small example of its species, which is given by Erichson as only $\frac{1}{4}$ lin. less than *umbrosus*; and is of an exactly oval outline, convex, dull (being as closely and finely punctured as *umbrosus*), clothed with very evident, depressed, grey hairs, with the two basal joints of the antennæ pitchy-testaceous, and the anterior tibiæ considerably dilated towards the apex, with their outer margin finely denticulated to a little below the middle, and then armed with three or four stronger and rather irregular teeth.

According to M. Brisout, *M. incanus* has been found by him on *Solanum dulcamara* and *Nepeta cataria*. His characters for the species appear to agree well with the insect above recorded.

M. seniculus, Er., according to M. Brisout, is only a slight variety of *murinus*, Er., which name he retains. He does not, however, refer to Erichson's character for the latter, of the possession of stout setæ on the entire outer edge of the posterior tibiæ.

M. ovatus, on *Labiaceæ*. Not uncommon at Mickleham and Esher. A constant character for this species seems to be afforded, according to M. Brisout, by the slight sinuation of the posterior margin of each elytron, the sutural angle of which forms a slight rounded projection (i.e., the apex is not truncate).

M. flavipes, on *Ballota nigra*, *Melilotus*, and *Cirsium lanceolatum*.

M. rotundicollis, on *Trifolium medium* and *Genista*. Since my original record of this species, I have observed it in the collections of Mr. Waterhouse, Dr. Power, and Mr. Champion.

M. jugubris, on *Mentha*.

M. palmatus, Er., according to M. Brisout, is the ♂ of *obscurus*, Er., which name he employs. It occurs on *Teucrium scorodonia*, *Mentha aquatica*, and *Cynoglossum officinale*. He does not recognise *M. distinctus*; to which, as it is described as "moderately shining," and as equalling *small erythropus* in size, I think our common palmated species cannot be correctly referred; indeed, having read Mr. G. R. Waterhouse's notes of his comparison of British types with Erichson's own specimens at Berlin, and having also carefully examined those types, I have little or no doubt that the males of our insect are *palmatus* and the females *obscurus*.

M. bidentatus, on *Lotus*.

M. erythropus and *M. exilis*, on *Papilionaceæ*.

M. solidus, on *Genista* and *Lotus*.

My *M. pictus*, according to M. Brisout, is the *M. mutabilis* of Rosenhauer (Thier. Andalus., 1856, p. 102), hitherto only recorded from Algeria, Spain, and Provence,—localities not much in accord with the north-eastern coast of Yorkshire. *M. mutabilis* is sometimes entirely black, whereas all of the numerous specimens of *M. pictus* that I have seen have a red spot on each elytron; but, as I have myself supplied M. Brisout with specimens of my insect, there can be no doubt of his knowledge on that point.—E. C. RYE, 10, Lower Park Field, Putney, S.W.: March, 1872.

Note on Pogonius littoralis.—M. le baron M. de Chaudoir, in his recent "Essai monographique sur le groupe des Pogonides," in the *Annales de la Soc. Ent. de Belgique*, xiv, p. 26, after pointing out that the true *P. littoralis* of Dejean is only found in the south of France, Algeria, Dalmatia, and near Odessa (and that presumably it is to be found in Spain, Italy, and Greece), remarks that Dawson's *littoralis* is probably only a large variety of *P. chalceus*, as the shape of the thorax and the laterally effaced striæ of the elytra mentioned by the English author do not fit the true *littoralis*. The only variations of *chalceus* mentioned by Chaudoir are in size (not relative length of thorax and elytra), the more or less rotundity of the sides of the thorax, and coloration; consequently the salient diagnostic characteristics of Dawson's insect remain unaccounted for: but it should be also remarked that the latter (Geod. Brit., 71) notices other particulars referred to by Dejean, upon which he states that little reliance is to be placed; thus leaving room for the suspicion that his insect is not identical with Dejean's.—ID.

Note on the larva-case, &c., of Olythra 4-punctata.—Prof. Westwood, in his excellent 'Introduction,' informs us, on the authority of M. Wandouer, and of a statement in Fuessly's 'Archives,' that "the larvæ of the genus *Olythra* inhabit hairy cases." This statement I find is inapplicable to the case of *O. 4-punctata*, which I found in numbers in the nest of the Scottish wood-ant (*Formica congerens*?) during a short visit to Braemar in May last. Besides being destitute of hairs, it differs considerably in structure from that figured at p. 383 of vol. i of the 'Introduction' as belonging to *O. 3-cuspidata*. It agrees with it in being pear-shaped and open at the narrow end; but, in addition, affords an interesting illustration of how strength may be imparted to a structure at the smallest cost of material with the least additional weight.

From the upper side of the mouth, which is slightly bent downwards, and at

the distance from each other of about half a line, there run backwards, divergently, two ridges for about half the length of the case. A little below these, and parallel to them, are two other ridges, each shorter than the one next above it. The lowest is, however, sometimes obsolete. Between the two upper ridges first mentioned, three other pairs parallel to them, and consequently meeting at points more and more removed from the anterior edge or mouth, give a succession of three Vs, placed one within the other, so as to cover the whole of the dorsal portion of the case. This pattern is frequently completed by one side of a V passing its own apex and joining the opposite side of its enclosing V, and thus forming a zig-zag line along the centre. The remaining surface of the case is comparatively smooth, and is wholly of a dull black colour. It measures from 5 to 6 lines in length, and from $1\frac{1}{2}$ to 2 lines in diameter at the broad end.

The larva, like that of *C. 3-cuspidata*, "has the body curved and not greatly unlike that of a small cockchafer." The head is somewhat rugose, and, with the legs, is of a rusty yellow colour. It seems to live chiefly in the old and less frequented galleries at the base of the ant-hill, and to feed upon the spongy material of which they are composed. When full-grown, about the end of May (24th), the mouth of the case is closed up with a portion of the same excrementitious material as that of which the body of the case is composed, and is generally attached to a twig or other portion of the nest. Occasionally, when pressed for room, the cases are attached to each other; and a poor unfortunate, not ready for its change, has been doomed to feed, dragging about with it a sleeping partner for a whole week. The insect remains in the pupa state from six to seven weeks, the first beetle having appeared July 9th. They continued to appear for twelve days. A specimen was, however, taken by myself at Ballater, on the top of an ant-hill, on May 6th.

When the empty cases are found, it will be observed that the posterior portion, and not the mouth, is the quarter by which egress has been effected. The beetle, however, comes out head foremost; showing that, previous to becoming a pupa, the larva had reversed its position. In its imago state, this would be impossible. —ROBT. HISLOP, Blair Bank, Falkirk: 7th February, 1872.

Notes on recent captures of Coleoptera.—I have recently taken in flood refuse on the banks of the Thames at Walton, three or four examples of *Ptenidium atomaroides*, Mots. (determined by the Rev. A. Matthews, who informs me that my examples are specifically identical with his own unique British specimen recorded in Ent. Mo. Mag., viii, 152). Amongst a great many ordinary species, taken at the same place, the following seem noteworthy:—*Homalota Eichhoffi* (only before recorded in this country from Rannoch), *angustula* (common), and *canescens*. *Ilyobates forticornis*, two or three. *Ocyopus fuscatus*, *Stenus opacus* (several), *Argus plantaris*, *melanarius*, and *fuscipes*. *Lathrobium punctatum* (several), *quadratum*, *longulum*, *boreale*, &c. *Achenium humile*, three. *Philonthus rubripennis*, *fumarius*, &c. *Protinus macropterus*, *Stilicis geniculatus*, *Myrmedonia limbata*, *Rhinoncus incompactus*, *Baridius lepidii*, sparingly. *Pterostichus gracilis*, *Anchomenus micans*, *Euplectus ambiguus*, *Bryawis hæmatica*, common (and in abundance at Staines), *Stenolophus exiguus*, in abundance, unaccompanied by *luridus*, &c.

I have also taken in flood refuse, on the river bank at Staines, *Scydmonus pusillus*, a few specimens of both sexes (I subsequently met with a pair of this at Tottenham, on the banks of River Lea, and a single specimen at Walton); *Dromius signa*, &c.—G. C. CHAMPION, 274, Walworth Road, London, S.E.: March, 1872.

Capture in Scotland of Zelleria sawifragæ, Staint., a species new to the British list.—Last July I captured, at Braemar, a specimen of this species, which is described and figured by Stainton in Vol. xi of the 'Natural History of the Tineina,' and which has hitherto been found only on some of the Alps of central Europe. It was found amongst *Sawifraga aizoides*: on the continent the larva is known to feed upon *S. aizoon*, which is not a British plant.—F. BUCHANAN WHITE, Perth: March, 1872.

Note on Pempelia albariella.—A short time since, I received from my friend Dr. Standinger, a beautiful pair of *Pempelia albariella*, Zeller. It is very distinct from the species which was taken in the Isle of Wight by Mr. Davis, to which, indeed, it bears but little resemblance.

Mr. Davis' insect is more allied to *P. obductella* and *P. ornatella*. I possess many of the European species of *Pempelia*, but I cannot find the Isle of Wight insect among them; and, if it is not described by any continental author, it must, of course, retain the name of *Davisella*, given to it by Mr. Newman.—HENRY DOUBLEDAY, Epping: February 13th, 1872.

[I, too, have lately received from Dr. Staudinger, under the name *P. albariella*, Zell., a species which differs considerably from Mr. Davis' insect.—H. G. K.].

Notes on Lepidoptera from the neighbourhood of Norwich.—On the 28th August last, I determined to make a final attempt to obtain a few *Depressaria granuloseella* at sugar, in what had been their favourite locality the year before. But the weather would not be propitious, and I saw none, but was somewhat consoled by finding, on an old ash tree, the first *Cirrhædia ærampelina* that I ever saw alive.

It was a beauty, and I would gladly have worked for more, but was on the point of leaving home for a fortnight, so I indicated the locality to my young friend Mr. Frank Wheeler, who was staying in Norwich at the time, and begged him to work it up. This he did, to some purpose; for, on my return home in the middle of September, he showed me not only several *ærampelina*, but a lovely series of *Xanthia gilvago* and *citrigo*, with one *aurago*, and *Agrotis saucia* and *Thera firmaria*, all of which had been taken in the same neighbourhood.

Not having seen either of the two rarer *Xanthia* alive, I was slightly excited, and lost little time in making their acquaintance. On the first night, however, only *gilvago* (three specimens) appeared; and it was not till September 27th that I took *aurago*. Even then it was very scarce, and *gilvago* nearly over, so many journeys produced few specimens; but two or three more *Thera firmaria* turned up, as well as specimens of *Xylina rhizolitha* and *Calocampa exoleta*.

Of course, the sugar was enlivened by swarms of *Anchocles*, *Orthosia*, *Glæa*, and other common things, and *Catocala nupta* showed its grand proportions occasionally till the middle of October; but, strange to say, though many oak trees were sugared, *Chariptera aprilina* was not common, and of *Anchocles rufina* but two specimens occurred.

One night (October 16th), the wind being furious, and the moths unable to face it, I searched a dead hedge on the sheltered side of a plantation, and found sitting on the sticks, not only the common *Orthosia macilenta*, *Glæa vacciniis*, and *Xanthia ferruginea*, but also two worn females of *A. gilvago* still out. Here also were fine *Cidaria mista*, and lovely varieties of *Oporabia dilutata*, ♀.—GEO. G. BARRETT, Norwich, 15th January, 1872.

Notes on British Tortricidae.—On July 11th, 1868, I beat from an oak tree in a wood on the borders of Hants, a female specimen of a *Tortrix* with which I was unacquainted; but as, after a lengthened search, no more specimens could be found, I came to the conclusion that it must be an extraordinary variety of *T. pyrastrana*, and as such it remained in my collection till very lately. Having, however, undertaken an investigation of our native *Tortricidae*, I sent this specimen to Mr. Stainton, who expressed the opinion that it was *T. piceana*, Linn., and in this he is decidedly confirmed by Professor Zeller.

The only previously recorded British specimen is, I believe, that in Mr. Edwin Shepherd's collection, obtained from the New Forest by the late Mr. Stone, and noticed in a note to the genus in Wilkinson's 'Tortrices,' p. 65. It is singular that both captures should be in the same county, and probably in very similar localities. Both, moreover, are females.

I also find that I have two worn specimens of *Orthotania ericetana*, mixed with an allied species, both of which were taken in one of the woods near Haslemere, thus adding another scarce species to the rich fauna of that locality.

I am anxious to obtain, for examination, British specimens of *Tortrix costana* and *litorana*, *Penthina similana*, Wilkinson, *Halonota ravulana*, *Mizodia rubiginosana* (Bouchardana), *Stigmonota vernana*, Knaggs, *Retinia duplana*, *Catoptria modestana*, *Sericoris Daleana*, *Eupæcilia griseana* and *vectisana*; and shall feel greatly obliged to any friend who will lend them to me. If any one can favour me with a sight of native examples of *Halonota costipunctana*, *Stigmonota Heegerana*, *S. pygmaeus* or *Argyrolepis Mussehliana*, I shall esteem it a particular favour.

I also want local series, for examination, of the unicolorous species of the genus *Dicrorampha*, especially *ulicana*, *saturnana*, *senectana* and *'tanaceti*, or any reliable particulars of their life-histories; also any information respecting the preparatory states of our pea-feeding species of *Endopisa* (*nebritana* and *pisana*) tending to prove, or disprove, their distinctness.—ID.

Results of experiments on variety breeding (Tephrosia crepuscularia).—The following note may prove interesting to those who have bred varieties of *Lepidoptera*.

A few years ago, I obtained three batches of ova from dusky smoke-coloured females of *Tephrosia crepuscularia* (*laricaria* of Stainton's Manual) by males of the ordinary and typical clayey-grey colour. From these ova, I reared to maturity in the following year about 160 moths, in the exact proportions of half dark and half pale. I now had the opportunity of obtaining ova from *crepuscularia*, of which both parents were dark. They thrived, and my series the next year emerged in about the proportion of two dark to one pale.

Again, I obtained ova from dark parents out of this batch—darkly, bred dark specimens: and this year my whole series (90) has emerged dark, not one casting back to the original and natural colour.

Before I reared this species, I used to (and I still can) take the dark variety at large in the larch plantations here, but sparingly, and in a much lower proportion, —say one dark to thirty of the typical colouring.

If others who have reared varieties of any species would publish their experience, it might elicit some interesting facts.—JOHN T. D. LLEWELYN, Ynisgerwn: March, 1872.

[Such observations as these by Mr. Llewelyn are most valuable. We cordially endorse the opinion expressed in his concluding paragraph.—EDS.]

Note on the variation of Triphæna orbona, &c.—My breeding cage is now yielding me a fine series of *Triphæna orbona* from eggs laid by the black and red varieties (*Curtisii*, Newm.). The proportion of dark black, reddish, and light forms is about equal.

I have bred some remarkably fine *Demas coryli*, *Ceropacha flavicornis*, *Trachea piniperda*, *Halias prasinana*, &c.—G. NORMAN, Cluny Hill, Forres, N.B.: 21st February, 1872.

On a Trichopterous insect (Limnophilus) from the Falkland Islands.—So little is known of the natural productions of these distant British possessions, that any note concerning them, however meagre it may be, can scarcely fail to be of interest; and the present one I take to be of more than passing value, inasmuch as it throws light upon a very remarkable point in the geographical distribution of insects.

Some little time since, my friend Mr. Bates received a small consignment, chiefly of *Coleoptera* (in spirits), from those Islands; and among them were two specimens of a Caddis-fly. Both are females, and this circumstance (combined with their inferior condition) renders it inadvisable that a description should be drawn up, or name given, without information regarding the other sex. They appear to represent a species of *Limnophilidæ* of about the size of the European *vittatus*, *centralis*, *ignavus*, or *striola*, and much resemble the two latter in *facies*.

I have several times called attention to the apparently total absence of the family *Limnophilidæ* (so abundant in the temperate regions of the north) in the Southern Hemisphere; and it was not until I had become acquainted with Gay's work on Chili, and was informed by Herr Brauer that the Vienna Museum possessed insects of this family from that country, that I fully realised the correctness of my formerly expressed suspicions as to the quarter in which its representatives might be sought for with a probability of success.

These two small insects, therefore, furnish another proof of the affinity of the insect-fauna of the extreme southern parts of South America with that of Europe, Northern Asia, and extra-tropical North America. The port of Stanley, Falkland Islands, has of late years become an important place of call and harbour of refuge for mercantile shipping, and it will thus probably be difficult to decide, in some cases, as to which animals and plants are really indigenous and which introduced. But a Caddis-fly occurring there cannot be other than truly indigenous.—R. Mc LACHLAN, Lewisham, 29th January, 1872.

Eristalis tenax attracted by painted flowers.—In the afternoon of the 27th August, 1871 (a bright, sunny day), a specimen of *Eristalis tenax* entered my sitting room through the open window, and, flying in a straight line towards one of the flower-bunches represented on the wall-paper, hovered in front of, and at last settled on one of the painted red flowers. Very soon an angry buzz proclaimed that the fly had discovered its mistake; but, not content with having been deceived once, it abruptly left the spot and successively visited several other bunches, darting very noisily and rapidly from one to the other. After having watched its proceedings for some minutes, I secured it. Of course the well-developed eyes of this Dipteron betoken great visual power; but it is not often that a lucky accident helps us to prove that sight alone directs it to flowers, because, in the case of

those natural odoriferous, we can never be certain that their scent has not helped to attract the fly.—ALBERT MÜLLER, Eaton Cottage, South Norwood, S.E. : 10th February, 1872.

Sudden and unaccountable disappearance of particular species of insects.—On reading over the remarks by Mr. Edward A. Waterhouse on this subject in the February number of the Magazine, I am reminded of a circumstance that occurred to myself in the first week of July, 1861. I was out on an insect-hunting excursion round Lochaber Loch, about five miles from Dumfries, a place at that time very famous for *Lepidoptera*. On returning home by way of Dalscairth, I thought I would just look in and see what could be discovered on a small patch of meadow-land close by the roadside. *Procris statice* was hanging on almost every blade of grass: I had never seen the insect before. I stood spell-bound with wonder and astonishment; their fine blue-green wings glancing and reflecting in the sun was unquestionably the finest entomological sight I ever witnessed. I had with me at the time only some ten or twelve empty boxes, which I soon filled, putting three or four in a box, without the aid of a net. I went back next morning, thinking to take a good supply, but not one was to be found; nor have I ever met with the insect since, although I have never failed to look for it. About the same period (1861), *Vanessa Io* was rather a common butterfly, both in Dumfries and Kirkcudbright: for the last eight or nine years I have not seen a single specimen.—WM. LENNON, Crichton Royal Institution, Dumfries: February 8th, 1872.

On the relation between generic and specific names.—I am glad to find that Dr. Sharp is not enamoured of the "deceptive" Pauline, and am much obliged to him for his reasons in support of Dr. Staudinger's conclusion (*ante* p. 254). But, if my friend will excuse me for saying so, I think he misapprehends the Linnean method of nomenclature.

I do not accede to the proposition that "the name of the species (meaning thereby, the specific or trivial name) is the real basis of zoological nomenclature." No doubt, in a mononymic system, each word adopted or formed as the name of a species would be or become, when applied to the object, a noun substantive; and it was this very circumstance which necessitated the introduction of a different system of nomenclature. In a mononymic system, we should require as many separate nouns as there are objects to be named; if a separate name were framed for each species, it would be impossible to recollect them all; the multiplicity of natural objects and the weakness of human memory required, therefore, some artifice to make it possible to recollect or apply their names. The Linnean artifice is, to name an object by means of two steps in the successive division of objects into an ordinate system of classification. Each genus has its name, which is a noun substantive; and the species is marked by the addition of some epithet to the name of the genus—by the addition of another word, which may be, but is not necessarily, a noun substantive; which in fact is more frequently an adjective; and which, when a substantive, is epithetic or used adjectivally.

"*Insectum nomine generico et specifico rite est nominatum*," as Fabricius hath it (*Phil. Ent.* vii, 53). "The name of the insect consists of the name of the genus as a substantive, and of the name of the species itself as an adjective; the generic

name must be a substantive; the specific name is either a pure adjective (as *Carabus auratus*), or a substantive in apposition with the generic name (as *Pinus fur*), or in the genitive case (as *Dorcadion Spinolæ*).” Such, at least, was the view of the Dresden Congress of 1858. See Berlin. Entom. Zeitsch., ii, Appendix, p. xi).

According to Dr. Sharp, “the natural course of nomenclature is this—a name is given to a species.....the generic noun is a mere secondary affair.....this latter being really much more adjectival than the specific noun.” According to Linné, the generic name must be fixed, before we attempt to form a specific name; “the latter without the former is like the clapper without the bell.” The name of the genus being established, the species may be marked by adding to the generic name “a single word taken at will from any quarter,” i. e., any casual or arbitrary appellation. See the *Philosophia Botanica*, which, though containing many capricious and unnecessary rules of nomenclature, is deserving of more consideration than it appears to receive at the present day.

The binary nomenclature then denotes an object by the generic and specific names; neither the generic name alone, nor the specific name alone, is the name of the object; it is the two together that constitute the name. And of the two, I, in opposition to Dr. Sharp, but in accordance with Linné, the founder of the system, hold that the generic is the primary and the species the secondary name. The species is the unit for classificatory purposes, but the genus is, in the binary system, the unit or base of nomenclature. The genus is, for the purpose of nomenclature, a unit, even though it include many species; its name is a noun substantive of the singular number, whilst all the higher groups have plural names.

A bad habit has sprung up amongst Entomologists,* of using the trivial name without the generic—against which I take this opportunity of protesting. Thus, I frequently see lists of desiderata, or reports of captures, including (say) *urticæ* or *typhæ*, *littoralis* or *rhododactylus*. How in the world is any one to know whether the insect intended is a butterfly, a beetle, or a bug? Is the *urticæ* in question a *Vanessa*, *Spilosoma*, or *Habrostola*, a *Brachypterus* or *Ceuthorrhynchus*, or a *Phygadei-cus*? is the *typhæ* a *Nonagria*, *Donacia*, *Chilacis*, *Telmatophilus*, or *Mesoleptus*? is the *littoralis* a *Leucania* or a *Sericoris*, a *Pogonus* or a *Pæderus*, a *Cercyon*, a *Silpha*, or a *Stenus*? is the *rhododactylus* a *Pterophorus* or a *Phlæosphthorus*?

To tell me that *niger*, when used as a specific name, “indicates a certain definite object,” is untrue, if the specific name be divorced from the generic name. If we had a mononymic system, in which the same word was never applied to two different objects, then the specific name would indicate a certain definite object; but as, in the binomious system, the same specific name may be repeated any number of times provided it comes not twice in the same genus, it is simply illusory to say that the word *niger*, by itself, indicates any definite object at all. Which does it indicate? *Gobius niger*? *Hyoscyamus niger*? *Hemiteles niger*? or *Pterostichus niger*? a fish, a plant, or an insect? or what?

“The two words *Lycæna Minimus* are analogous (says Dr. Sharp) to the two words *Yew tree* (or rather, *Tree yew*) in ordinary language.” I submit that they are nothing of the sort. “Tree” is no part of the name of the Yew, any more than *Insectum* is part of the name *Lycæna*. “Tree” is not the name of a genus, like *Lycæna*; and “yew” is not a specific name, like *Minimus*. “Yew” is itself

* † Collectors.—Edu.

the generic name; *Taxus baccata* is the scientific name of "the common yew," and *Taxus* corresponds to "yew," as *baccata* corresponds to "common." I do not recall the name of a second species of *Taxus*; let us take *Juniperus* instead. The analogy is not between *Lycæna Minimus* and "Juniper bush" or "Bush juniper," but between

The common JUNIPER, *JUNIPERUS communis*, and *LYCÆNA maxima*.

The dwarf JUNIPER, *JUNIPERUS nana*, and *LYCÆNA minima*.

If *communis* and *nana*, the epithets by which in the universal botanical vocabulary we distinguish the two species of *Juniperus*, are nouns substantive, I suppose that "common" and "dwarf," by which in the local vocabulary we distinguish the same two species, have as good a right to claim substantive rank. But I submit that *Minima* is just as much (and no more) the name of the particular kind of *Lycæna* as "common" is the name of the particular kind of Juniper, *i.e.*, it is part, and only part, of the object; and that *Minima* is just as much (and no more) a noun as "common" is a noun, *i.e.*, it is a noun adjective.

Again, there is no analogy between "*Lycæna, Minimus*" and "*Staphylinidæ Staphylinus*." The former is the name of an insect, the latter is not. *Staphylinidæ* is a noun of multitude, a collective noun, the name of a group of which *Staphylinus* is a member; and just as a man's "chattels" include alike his horses and his household furniture, so the group *Staphylinidæ* may include things of any gender. The single word *Staphylinidæ* is the name of one thing, and the single word *Staphylinus* is the name of another thing; but "*Staphylinidæ Staphylinus*" is not and cannot be the name of anything. On the other hand, the single word *Minima* is not the name of anything, but *Lycæna Minima* is.

I confess that Dr. Sharp's last paragraph puzzles me. I cannot follow him into the region of "universal grammar." I am not acquainted with it; and I will only suggest that it is better to "handle Latin and Greek words according to the rules" of Latin and Greek grammar. This may be a "curious classical prejudice;" if it be, though I can lay no claim to classical scholarship, I plead guilty of the curious prejudice.—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn: March, 1872.

Reviews.

FAUNA PERTHENSIS; Part i, *Lepidoptera*; by DR. F. BUCHANAN WHITE. 1871.
Published by the Perthshire Society of Natural History.

Either the possession of the far-famed Rannoch district, or of an indefatigable President of their local Natural History Society, or of both combined, has called forth an amount of energy among the Perthshire Naturalists that those of some other counties would do well to copy. Not the least significant sign of their activity is the contemplated publication of a 'Fauna' of the county, of which the first instalment is now before us. The list furnishes much valuable information to the general entomologist, both British and foreign, more especially in the judiciously interspersed remarks on the variations to which many species are subject in the district, a fact to be respected, when we read that the elevation of the land ranges

from the sea-level up to nearly 4000 feet. A valuable introductory portion precedes the list of species, with much interesting matter concerning aspect and climate, and a comparative view of the number of Perthshire *Lepidoptera*. The weak point is the break-down at the end of the *Crambidae*: a brief list of *Tortrices* is given, but the *Tineina*, &c., are (alas!) nowhere. The county is divided into districts according to the various watersheds, with a good outline map explaining them. In considering the methods of sub-division to be employed we are told that a division by parishes was rejected as unnatural. With all respect for our Perthshire friends, we feel tempted to enquire whether the actual boundaries of the county are not, for the most part, equally unnatural. What if the persecutions by our friends should cause an exodus of Vertebrates and Invertebrates into the neighbouring counties of Argyle, Stirling, Inverness, &c.?

TRICHOPTERYGIA ILLUSTRATA ET DESCRIPTA. A MONOGRAPH OF THE TRICHOPTERYGIA. By the Rev. A. MATTHEWS, M.A., Oxon. London: E. W. JANSON, 28, Museum Street. January, 1872.

We have, at last, to congratulate the entomological world and our esteemed correspondent upon the publication of this *de minutissimis opus maximum*; the 189 closely printed quarto pages and 31 plates of which (comprising upwards of 320 separate objects) cause the 98 octavo pages (very rivulets of type meandering through wide meadows of margin) and 9 plates of Gillmeister to look insignificant enough. To show how the study of these wonderful atoms has increased since 1845, the date of the latter work, it may not be out of place to note that the single genus and 36 species of Gillmeister have now increased to 21 genera and 149 good species, of which latter 78 are recorded from Great Britain.

The descriptive part of Mr. Matthews' work is written wholly in Latin, the portion relating to the general characters being also given in English, in which language the introductory chapter is also written.

The author places the *Trichopterygia* between the *Philhydrida* (or *Hydradephaga*) and *Brachelytra*, commencing the group with *Nossidium*, and finishing with *Ptinella*, from which genus the *Brachelytra* proceed by an almost imperceptible gradation. Admitting the decided relations between this group and certain of the *Trichopterygia*, it seems, however, to us that the links between the latter and *Gyrinus* or *Cercyon* (as the case may be) are quite unsatisfactory. But this will only afford another instance of the impossibility of reducing natural classification to a straight or circular line.

The original descriptions of all genera and species already published are given in Latin, according to the authors' names, in alphabetical order. Next follows an elaborate account of the external anatomy, with notices of larvæ and pupæ and of the limited portions of the internal anatomy known to the author. Then, after a synoptical table of genera, commences the descriptive portion of the work, the following genera and species being characterized as new: *Euryptilium* (p. 63), for the reception of *Trichopteryx saxonica*, Gillm.; *Throscidium* (p. 64), for two new species, *Germainii* and *Fairmairii* (both from S. America); *Motachulanium* (p. 72), in honor of the well known Russian Coleopterist now deceased (whose accurate ex-

pears to have been concentrated with marked success upon this group, though his polygraphic propensities have certainly not elevated his rank in any other), to receive a new sp., *sinuatoecolle*, from N. America; *Ptenidium Kraatzii*, from Scotland (but originally published in this Magazine, ante, p. 152); *P. Mannerheimii*, N. America; *Ptilium Sharpi*, Vancouver's Island; *P. Foersteri*, France; *Microptilium* (p. 107), for *T. pulchella*, Allib.; *Trichopteryx Aubœi*, *T. Motschulskii*, *T. Wenckeri*, *T. Alliberti*, and *T. Sallœi*, S. America; *T. Poweri*, England (*Chevrierii*, Matth., olim); *T. Reichæi*, *T. diffinis*, *T. Josephi*, and *T. Henrici*, N. America; *T. Marseullii*, France; *Actinopteryx* (p. 148), to receive *fucicola*, Allib.; *Ptinellodes* (p. 158), to receive *Ptilium testaceum*, Lec., nec Heer (renamed *Lecontei*); *Pteryx Duvalii*, N. America.

Some changes in nomenclature are also made, original synonymy is given, and corrections of errors are noted (*à propos* of which it may be observed that the unnoticed errata of the work are somewhat numerous).

After this, the author gives descriptions of species observed since the commencement of his work, the following being new: *Nephanes meridionalis*, S. America; *Trichopteryx Hornii*, N. America.

37 species are recorded as unknown to Mr. Matthews, and 28 others as indicated only by name, with no descriptions; and the work concludes with an account of the 58 anatomical preparations from which its figures and descriptions were taken.

The first 19 plates, consisting of outline engravings from the author's drawings of general points of structure, &c., and of the imago, with highly magnified anatomical details, of the typical species of each genus, appear to be as near perfection, for accuracy, as could be attained; but the remainder, on which are figured limbless half-bodies, especially intended to exhibit superficial sculpture, seem scarcely so satisfactory; as, however accurate their outline, their want of facies is most likely to cause their recognition anything but easy to all except those who have considerable knowledge of the group. The medium of lithography, moreover, being hardly adequate to represent minute characters of surface, these plates will not, as figures, bear comparison with Sturm's beautiful engravings in Gillmeister's work above mentioned; but it would seem that the beauty of these latter is their only claim to attention.

The eccentricities of *Astatopteryx* and the Tachyporiform *Limulodes*, with its wonderful mesosternum, will, it is to be hoped, have the effect of inciting a more general study of this somewhat neglected group.

Obituary.

Dr. Frans Xavier Fieber.—We learn from Deyrolle's 'Petites Nouvelles Entomologiques' of the 15th March, that Dr. Fieber died at Chrudim, in Bohemia, on the 23rd February, aged 65. European Hemipterology has in him sustained a loss that will not soon be replaced; for probably no one has done more, by pen and pencil, to advance the study of European Hemiptera. We believe that, for many years, he was occupied on a general work on the Homoptera, and we fully second *Dr. Puton's* remark that it is much to be desired that some editor, capable of the

task, should publish the manuscripts he has left behind him: this desire, we are sure, will be felt by English Hemipterists, who have so largely benefited by Dr. Fieber's opinions and assistance.

ENTOMOLOGICAL SOCIETY OF LONDON, 19th February, 1872. — Prof. J. O. Westwood, M.A., F.L.S., President, in the Chair.

The following gentlemen were elected Subscribers to the Society:—Dr. Ransom, F.R.S., of Nottingham; H. W. Livett, Esq., M.D., of Wells; J. H. A. Jenner, Esq., of Lewes; and G. B. Rothera, Esq., of Nottingham.

Mr. F. Smith called attention to the fact that mice are in the habit of devouring the dead pupæ of *Bombyx mori* contained in what is known as 'silk-waste.' Among a parcel of this 'waste,' he had found a double cocoon containing two pupæ, and evidently constructed by two larvæ working in concert. Mr. Weir called attention to similar cocoons of *Eriogaster lanestris*.

Mr. Butler exhibited dried specimens, and drawings, of an enormous parasitic larva, apparently pertaining to some species of *Ichneumonidæ*, that had emerged from larvæ of *Pygæa bucephala*, which they nearly equalled in size: he had failed to rear the perfect insect.

Dr. Buchanan White communicated extracts from his note book relating to the habits of ants as observed by him at Capri, in June, 1866, and bearing upon Mr. Moggridge's statement as to the storing of grain by ants at Mentone (see Proceedings for 1st January). Dr. White saw the ants cutting a long pathway through the grass, and conveying into their nest various seeds and pods. Mr. Horne stated that he had noticed a precisely similar habit in some of the ants of the plains of India, from the nests of which he was sometimes able to collect several handfull of seeds.

Prof. Westwood exhibited type specimens and magnified drawings of the creatures upon which Latreille had founded his Crustaceous genus *Prosopistoma*, and again referred to the opinion of Dr. Joly, that these animals, and "le Binocle" of Geoffroy, are immature conditions of *Ephemeridæ*. The absence of mouth-organs, and several points of structure, did not accord with the relationship assigned to them by Dr. Joly; at the same time, the legs were totally unlike those of any Crustacea known to him. In external form they bore some resemblance to the pupæ of *Batisca obesa*, one of the *Ephemeridæ*, as figured by Walsh.

Mr. McLachlan was of opinion that the structure of *Prosopistoma* was opposed to the idea of its pertaining to the *Ephemeridæ*. He exhibited specimens of the recently described *Boreus californicus*, Packard, from California.

Mr. Müller read a note from Mr. P. Cameron, Jun., of Glasgow, in which the latter asserted that gall-making saw-flies avoid those parts of willow trees that overhang water, as inimical to the descent of the larvæ for the purposes of pupation in the earth. A similar fact had been recorded by Osten-Sacken with regard to the American plum-weevil. Mr. Müller suggested that this habit in insects might be turned to practical account as a means of preserving choice fruit trees from their attacks, and suggested the use of glass, it being well known that water-beetles often mistook glass for water. Prof. Westwood said he had known the glass in a frame to be broken by a *Dytiscus* flying against it.

4th March, 1872.—The President in the Chair.

Ernest Kaye, Esq., of Penge, was elected a Member.

Prof. Westwood exhibited living examples of *Argas reflexus*, from the crypt of Canterbury Cathedral, which species he had noticed at the Meeting on the 5th ultimo. Also another species of the same genus collected by Dr. Livingstone in Central Africa, where it annoyed the natives by entering the feet between the toes, causing pain and inflammation.

Mr. S. Stevens exhibited an apparently undescribed species of *Phycita*, from the neighbourhood of Gravesend, remarkable for its pearly hue and *Crambus*-like form.

Mr. F. Smith stated that he had received a further communication from Mr. Moggridge regarding the grain-storing ants at Mentone. Mr. Moggridge had confined a colony of ants in a glass vessel for purposes of observation, and he was now able to state positively that they fed upon the stored grain.

Mr. H. W. Bates exhibited a series of British species of *Carabus* side by side with their nearest allies from Eastern Siberia. He stated that of fifty species of *Carabus* inhabiting the latter country, one only (*C. granulatus*) was found also in Western Europe. He recalled the attention of the Society to the zoological division of the globe into regions as proposed by Sc Slater, and urged that the Palæarctic Region (including Europe and Northern Asia) was not a natural one, in so far as its Insect-fauna was concerned, however much it might be so as regards Mammals and Birds. Neither was there the difference between the Insect-fauna of the Nearctic (North American) Region and that of the Palæarctic, that seemed to be assumed when the division was made: on the contrary, there was much resemblance between the insects of Eastern Siberia and those of Western America. He considered an investigation as to the districts that presented the most peculiar forms as more philosophical for purposes of division. Prof. Westwood followed by pointing out the necessity for ascertaining the range of each species, and the variation or modification it presents in different districts. Dr. Sharp said that the Spanish *Carabi* were mostly peculiar to the Iberian peninsula, and that those species occurring both there and in other parts of Europe were modified. He also stated that the Siberian species of *Oxytelus* were all identical with those of Britain, whereas the *Bledii* were all different.

Mr. Müller exhibited a leaf of *Cinnamomum nitida*, from Bombay, bearing galls which he referred to the productions of an *Acarus* of the genus *Phytoptus*, thus showing the occurrence of this genus in India.

Mr. Baly communicated descriptions of new species of exotic *Cassidida*.

Mr. Kirby communicated notes on the Diurnal *Lepidoptera* described by Jablonsky and Herbst.

Mr. Dunning read an exhaustive paper on the genus *Acentropus*, in which he gave a *résumé* of all that had been written on the subject. He was of opinion that the genus was undoubtedly *Lepidopterous*, and that probably one species only existed, for which he retained the name of *Acentropus niveus*. In his introductory remarks, he commented strongly upon reasons recently given for ejecting it from the *Lepidoptera*, as opposed to the opinions of all who had studied the subject, which opinions were borne out by his own investigations. He placed *Acentropus* in the vicinity of the *Crambida* and *Chilonida*.

ON THE SPECIES OF *EMPIS* ALLIED TO *E. STERCOREA*, LINN.
(INCLUDING ONE NEW TO SCIENCE).

BY G. H. VERRALL.

These species of *Empis* are well distinguished by their yellow colour, elongate form, long, thin, bare legs, long antennæ (especially the basal joint), and by the eyes of the male being widely separated.

In the 'Berliner entomologische Zeitschrift,' xi (1867), p. 11—21, Loew has revised the European species and described ten, adding another at page 158, and a twelfth at xiii, p. 82; of these twelve, six were new or undistinguished, and Loew says that he doubts not, but that there are many other rare species which are overlooked, from the very great abundance of the common species allied to them. He describes—

<i>stercorea</i> , Linn.	<i>testacea</i> , F.
<i>stigma</i> , Mg.	<i>punctata</i> , Mg.
<i>dimidiata</i> , Lw.	<i>ignota</i> , Mg.
<i>univittata</i> , Lw.	<i>semicinerea</i> , Lw.
<i>stercorea</i> , var. b, Zett.	<i>trigramma</i> , Mg.
<i>læta</i> , Lw.	<i>lutea</i> , Mg.
<i>æqualis</i> , Lw.	<i>nana</i> , Lw.
<i>bilineata</i> , Lw.	
<i>punctata</i> , F.	
<i>testacea</i> , Zett.	

Closely allied to this group come a few other species distinguished by their shorter antennæ, and (except in *scutellata*, Curt.) by the eyes of the male touching on the *front*; of these I shall only notice *scutellata*.

I have hitherto found in Britain only *stercorea*, *punctata*, *trigramma*, *lutea*, *scutellata*, and an undescribed species allied to *lutea*, which I have called *concolor*. Concerning these, I have the following remarks to make.

1. *Stercorea*, which extends over middle and northern Europe, is distinguished from the other British species by the single distinct black line down the thorax, and its generally larger size; *scutellata* has only one line on the thorax, but has the basal joints of the antennæ shorter and yellow: of the European species, *dimidiata*, from southern Germany, is very much allied, but the prothoracic stigma is concolorous with the thorax, instead of black, the thorax

is duller, and the lateral lamellæ of the hypopygium are broader and obtuse, instead of acute; *univittata*, from middle and northern Europe, is smaller, the thoracic line is twice as broad, the occiput is nearly all black, instead of only slightly so, the prothoracic stigma is pale, the lateral lamellæ of the hypopygium are smaller, more acute, and black at the tip, and the upper lamella is blacker, more pilose, and bears on each side a small black, hairy process: *leta* has long black hairs on the under-side of the tibiæ, &c.

I have captured *stercorea* at Rannoch and Aberlady, and imagine it must be found in many places, from the frequency with which it occurs in collections.

2. *Punctata*, which is found all over Europe, has the disc of the thorax obscurely greyish, with three somewhat indistinct black lines, the *front* and the occiput nearly all blackish, the pleuræ just above the posterior coxæ with grey spots, the lateral lamellæ of the hypopygium long, acute, black at the tip and fringed with black hairs, the upper lamella with its upper margin black, and each angle produced into a black lobe: *semicinerea*, from the mountain regions of Germany, has the thorax still blacker, the sides even being grey, the lateral lamellæ of the hypopygium obtuse, the upper one simple, with its upper margin brownish: *testacea*, from Austria, is larger, with the abdomen and hypopygium all yellow, besides other differences: *æqualis*, from Germany, is smaller, and has yellow lines on the thorax, and a pale-haired differently shaped hypopygium: *bilineata*, from middle and northern Europe, also has a pale-haired differently shaped hypopygium, and has remarkably few and short bristly hairs on the thorax; both *æqualis* and *bilineata* have only a moderate-sized black spot on the occiput, and have scarcely any black line on the sides of the abdomen: *bilineata* has also yellow lines on the thorax and a differently shaped hypopygium.

I have found *punctata* in abundance near Darenth Wood and at Rannoch, and therefore suppose it to be distributed all over Britain.

3. *Trigramma*, from middle and northern Europe, is allied to *punctata*, but has narrow yellow lines on the thorax between the black lines, the lateral lamellæ of the hypopygium rather acute, the upper one simple, large; the whole of the hypopygium being bent back over the abdomen more than usual; the penis is exceedingly long.

It is the most abundant species in England, and I also captured it commonly at Rannoch.

4. *Lutea*, from middle Europe, is yellow, with only the antennæ, the ocellar spot, the margin of the upper lamella of the hypopygium and the tarsi, black; the lateral lamellæ of the hypopygium are produced into a very long, obliquely descending cone, fringed with long black hairs; the upper lamella is almost simple, and the slight pubescence seems pale; the female is much more bristly on the disc of the hinder half of the thorax than any other species of the group: *concolor* is darker, and has a differently shaped hypopygium.

I have never found *lutea* in abundance, but have caught it in various localities in the south of England, and one female specimen, in company with *concolor*, at Aberlady.

5. *Concolor*, n. sp.; ♂ ♀.

Lutea, *antennis maculâque occipitali nigris; hypopygii lamellæ laterales simplices, superior appendicibus duabus nigris; fæminæ thorax pilos perpaucos gerens.*

Long. corp. $2\frac{3}{4}$ — $3\frac{1}{4}$ lin. *Long. al.* 3 — $3\frac{1}{2}$ lin.

This species is allied to *lutea*, but is larger, more luteous; the occiput bears a moderately large black spot, frequently covering all the space just behind the eyes, and, in the only female I possess, covering the whole of the occiput, the *front* and face are frequently dark luteous with pale tomentum, the tarsi and extreme tips of the tibiæ are generally blackish, the wings are distinctly tinged with luteous; the lateral lamellæ of the hypopygium are rather short, simple, fringed at their tips with shortish black hairs, the upper lamella is small, with its angles produced into black lobes, clothed with short black hairs; the thorax of the female has no trace of the numerous black bristly hairs which are so conspicuous in *lutea*, ♀, but is almost without hairs at all, the incisures of its abdomen, and a peculiar dorsal line are blackish, this line is broad at the base of each segment, becoming very narrow at the end of the segment; the antennæ are quite black, while in *lutea* the second joint generally shows traces of yellow. Loew's *nana*, from Styria and Carinthia, seems to have the upper lamella of the hypopygium somewhat similar, but even more divided, and the lateral lamellæ more complex; it is also considerably smaller (*long. corp.* $1\frac{1}{4}$ — $2\frac{1}{4}$ lin.), and instead of the occiput, it has the front blackish, with pale tomentum.

I captured three males and a female of this species at Aberlady, on June 30, 1870, by sweeping in a wood near the coast, nearly a mile from Aberlady, on the road to the Railway Station. In company with it, I caught one female *lutea*.

I think it very probable that the solitary female from which the above description was drawn up is darker than usual on the occiput and abdomen. Although the measurements given would make this species nearly as large as *stercorea*, yet in appearance it only slightly exceeds *lutea*, as it is not so robustly built.

6. *Scutellata*. I have revived this name of Curtis for the species described in 1860 by Egger, under the name of *parvula*, in the 'Verhandl. der k. k. zool-bot. Gesellschaft,' x, p. 343, as I consider Curtis's description amply sufficient to recognise the species; his description is as follows:—"Ochreous; antennæ, excepting the two basal joints, fuscous, crown of head and post-scutellum slate colour; thorax bright ochre, with a very narrow black line down the back; tarsi yellowish-fuscous, dark at the extremity; wings nearly colourless: $2\frac{1}{2}$ lines.

"I took a pair in Coombe Wood the 4th of June."

I have never taken this species myself, but have seen several which belonged to the late Mr. J. C. Dale, who kindly gave me a pair.

The short, pale basal joints of the antennæ, and narrow thoracic line, distinguish it from the other British species, nor is there any recognised European species with these characters in which the eyes of the male do not touch. Its synonymy, as far as I can work it out, will be the following:—

Empis scutellata, Curt., B. E., 18, 12 (1824).

testacea, Wlk., Ins. Brit., Dipt., i, 96 (1851).

parvula, Egger, Verh. z. b. Ges., x, 343 (1860); Schiner, Faun. Austr., Dipt., i, 107 (1862); Lw., Berl. ent. Zeits., xi, 18 and 21 (1867).

Of Curtis's other species described at the same place, *stercorea* and *lutea* seem correctly named; *ochracea* is *lutea*; *dorsalis* and *testacea* are *punctata*, Mg. (Lw.); *ignota* and *punctata* are probably *trigramma*.

Walker's other species are correctly named, excepting that *ignota*, Mg., is now called *punctata*, Mg.

The Mulberries, Denmark Hill, S.E. :

March, 1872.

NOTES ON CICINDELIDÆ AND CARABIDÆ, AND DESCRIPTIONS OF
NEW SPECIES (No. 15).

BY H. W. BATES, F.L.S.

ODONTOCHEILA VERMICULATA, n. sp.

O. eximia (Lucas) proxime affinis, at multo major et magis robusta; suprà nigra, sericeo-nitida, subtus pedibusque nigro-cyaneis, capite dense strigoso, occipite medio solum crebre punctato; labro et palpis omnino nigris; mandibulis nigris, basi exteriori testaceo-vittato; thorace medio leviter rotundato-dilatato, suprà crebre et distincte transversim strigoso; elytris valde inæqualibus, impressione magna prope humeros, altera discoidali, alterisque duabus juxta apicem, basi et apice grosse subrugoso-punctatis, medio vermiculato-rugatis, nigris, vix cupreo- et certo sitû cyaneo-micantibus, guttis albis marginalibus duabus parvis, humerali deficienti; pedibus et præcipue tarsis quam in *O. eximia* robustioribus, tarsorum posticorum sulcis vix impressis.

Long. $5\frac{1}{2}$ —6 lin. ♂.

Taken sparingly in the Macas district, Equador, by Mr. Buckley.

ODONTOCHEILA IODOPLEURA, n. sp.

Ab *O. mexicana* differt elytris creberrime ruguloso-punctatis. *O. margineguttatæ* vere affinis, at capite postice magis angustato et thorace angustiori; capite obscure viridi, fronte cupreo-variegato, strigoso; labro nigro (basi excepto), testaceo-marginato; palpis testaceis, maxillarium articulis duobus ultimis, labialium articulo apicali, piceis; thorace angusto, medio leviter rotundato-dilatato, suprà transversim crebre undulatim strigoso, læte rubro-cupreo, sulcis fundo viridibus; elytris suprà æqualibus, vitta lata suturali purpureo-cuprea, altera exteriori viridi-ænea, tertiaque marginali violacea, utroque sexû guttis tribus marginalibus distinctis sub-triangularibus; corpore subtus cyaneo; pedibus violaceo-piceis; femorum dimidio basali trochanteribusque albo-testaceis; antennarum articulis 4 basalibus purpureo-cupreis.

Long. $4\frac{1}{2}$ —5 lin. ♂ ♀.

Chontales, Nicaragua; sent home by Mr. Thos. Belt.

THERATES CALIGATUS, n. sp.

Th. coracino similis, at multo minor, angustior, tibiis tarsisque nigris, etc. Nigro-violaceus vel nigro-cyaneus; capite valde ab affinibus diverso, pone oculos citius et rectius angustato, genis infra oculos vix tumidis; tubere frontali ut in *Th. coracino* magno, sulcis inter oculos vagis, vix distinctis; thoracis parte mediana valde transversa, rotundata; elytris ad apicem breviter (♂ siquiatim) truncatis, angulis prominulis, suprà in depressionibus sparsim punctatis et lateribus punctulatis; antennarum articulo 1^{mo} pallide testaceo; palpis testaceis, maxillarium articulis duobus ultimis, labialium articulo apicali, piceo-nigris; pedibus piceo-nigris, coxis, trochanteribus, femoribus (et abdomine) rufo-testaceis; labro ut in *Th. coracino* prope apicem tumido.

Long. $6\frac{1}{2}$ lin. ♂ ♀.

Philippines, probably Mindanao; many examples. In the same small collection were *Th. coracinus*, *fulvipennis*, *Semperi*, *vigilax* (*flavilabris*, F. ? a Mindanao form), and the following exquisite new species.

THERATES BELLULUS, n. sp.

Parvus, capite (cum oculis) elytris multo latiori, elytrorum apice juxta suturam vix sinuato, angulo exteriori nullo, suturali modice producto, dentiformi; fulvus, nitidus, capite mox pone oculos abrupte angustato, nigro, tubere frontali valido, suprà transversim striato, fulvo; vertice inter oculos longitudinaliter striato; labro elongato, convexitate suprà recta, apice abrupte deflexo, fulvo, genis nullo modo tumidis; thorace ut in Th. Ochaodiri angusto, medio fortiter rotundato; elytris omnino sparsim (in depressionibus densius) punctatis, vitta brevi suturali juxta basin, fasciæque angusta paulo obliqua pone medium, a sutura longe remota, nigris; antennis piceis, articulis 2 basalibus 3^{ti} 4^{ti}que apicibus fulvis; tarsis anticis nigris.

Long. 4 lin. ♂.

Philippines; one example.

DROMICA (MYMECOPTERA) POLYHIRMÖIDES, n. sp.

Nigro-cyanea, nuda, elytris leviter cupreo-tinctis, vitta utrinque haud procul a sutura paulo obliqua, a basi usque ad prope medium extensa, maculaque communi elongato-ovata ad apicem albo-testaceis; capite post oculos elongato, leviter angustato, cum thorace (angusto, cylindrico) passim eleganter dense acute (hoc transversim) strigosis, labro nigerrimo, macula ovata mediana albo-testacea; elytris absque humeris, a basi thoracis usque ad longe ultra medium gradatim modice dilatatis, apice ad suturam spinis longis validis instructo, suprà lineis 5 angustis elevatis, ante apicem desinentibus, lineis transversis creberrimis interstitialibus conjunctis; palpis flavis, maxillarium articulis duobus ultimis, labialium articulo apicali, nigris; corpore subtus, pedibus et antennis nigris, his articulis 5—10 dilatato-compressis.

Long. 9 lin. Lat. max. elytr. 2½ lin. ♂.

The pale spot at the apex, and the basal vitta, are not formed of pubescence as in the *Polyhirmæ*, which this species so wonderfully mimics, but are colours of the integument.

Region of the Middle Limpopo, S. E. Africa; taken by the celebrated traveller Karl Mauch.

DROMICA (MYRMECOPTERA) MAUCHII, n. sp.

E. maximis. Suprà nigra, opaca, thorace medio vitta interrupta cano-tomentosa, elytris vitta utrinque brevissima obliqua basali, maculaque elongata marginali ante apicem fulvo-testaceis; capite suprà passim acute (vertice undulatum), strigoso, pone oculos elongato et modice angustato; labro nigerrimo, vitta mediana flava; thorace longato, sub-cylindrico, antice paulo latiori et paululum rotundato, disco utrinque oblique undulatum strigoso, lateribus acute elevato-marginatis; elytris elongato-obovatis, humeris nullis, usque ad paulo post medium gradatim dilatatis, deinde citius angustatis, apice obtusis, angulis suturalibus breviter dentatis, suprà lineis angustis elevatis utrinque 5 ante apicem desinentibus, interstitiis et apice creberrimo profunde punctatis; corpore subtus pedibusque nigris nitidis; antennis nigris articulis 5—8 maxime (9—11 minus) dilatato-compressis.

Long. $11\frac{1}{2}$ lin. Lat. max. elytr. $3\frac{1}{8}$ lin. ♀.

Region of the Middle Limpopo. This magnificent species, quite unlike any other known, is dedicated to its discoverer, Karl Mauch.

CICINDELA COMPRESSICORNIS, Bohem., Ofvers. Vet. Ac. Förh., 1860, p. 4.

Herr Mauch also sent home a specimen of this beautiful species. It is a male, and probably belongs to the genus *Bostrichophorus*, although the labrum has only three teeth and the tarsi have no trace of grooves. These characters differ from those given by Chaudoir as those of *Bostrichophorus*, and drawn up from the female only; but it is possible they are sexual.

OXYGONIA; supplementary note.—Since the account given at pp. 237-42 appeared, I have detected another published species of this genus, in Thomson's 'Arcana Naturæ,' p. 91, under the name of *Phyllodroma Delia*. The ♂ only is described, and, if the colours are correctly given, it differs from all the species published by me, the only doubt being as to its identity with Erichson's *O. prodiga*. It is 15 mm. in length, above of a metallic green, "becoming purple on the sides of the head, thorax and elytra." The labrum is black, with two white spots (as in *O. gloriola* and *floridula*). Beneath it is of a "purple-red." The elytra have each three lateral, white spots, the hindmost of which is the largest, and oblique; and the punctuation resembles the species above cited in being irregular, with smooth and deeply punctured spaces. "Interior of Peru."

Kentish Town: April, 1872.

Note on Meloë cyaneus, Muls.—I have at present a pair of a *Meloë* which appear to agree with Mr. Rye's description (*ante*, p. 248) of a specimen found in the Isle of Man. I have taken one or two of this species or variety for several years consecutively, but could never feel satisfied to attribute them to *proscarabæus*: they are smaller, more glossy, not so black, and (some more than others) have a greenish or 'bronze' tinge, principally about the head and thorax. In the ♀ of the above-mentioned pair, the entire abdomen is slightly bronzed, as well as the head and thorax. I have always found these individuals feeding on grass, but they will also eat the common *Arum* leaves.—CHAS. G. ROTHERHAM-WEBSDALE, 78, High Street, Barnstaple: March 22nd, 1872.

Note on Meloë cyaneus, Muls.—Since the publication of my note on the subject of this insect (*ante*, p. 248), the Rev. R. P. Murray has very kindly forwarded to me a small congregation of oil-beetles (upwards of a score in number) just taken by him in the Isle of Man. An examination of these specimens convinces me that the doubts before referred to by me, as to the validity of the claim of Mulsant's *cyaneus* to be considered specifically distinct from *proscarabæus*, were well founded; as in this little family I find two examples at least with the head and thorax as comparatively free from punctures, and as glossy, blue, and shining, as those of the individual first recorded by me; and, although there is not an uninterrupted chain of specimens intermediate between these and such of the others as are certainly not separable from the most typical *proscarabæus*, yet the variations as regards size, colour, granulation of elytra, and punctuation of the head and thorax are so great, including so close an approach to the special peculiarities in the latter respect, that I have no doubt but that all must be considered as different states of the same species,—the extreme of which is apparently much more aberrant from the type than Mulsant's *cyaneus*. The longitudinal dorsal thoracic channel becomes imperceptibly modified to an isolated depression, often accompanied by two discal and almost circular depressions; and there is sometimes a faint transverse basal depression, simulating that of *violaceus*. Mr. Rotherham-Websdale's specimens above mentioned (courteously forwarded to me by him) are specially interesting, as having a semi-cupreous tinge over the whole of the body: they are about equal to the *Manx intermediate* specimens, as regards punctuation of head and thorax.—E. C. RYE, 10, Lower Park Field, Putney: April, 1872.

Note on Meligethes pictus, Rye.—Since the publication of my remarks on this species (*ante*, p. 269), my friend Mr. R. Lawson has communicated to me a few specimens of it from Scarborough entirely free from spots on the elytra. These are the first immaculate individuals of the species that have come under my observation, and were not before sent because they happen to be not quite perfect.—ID.

Note on a deformed antenna in Hydroporus obsoletus, Aubé.—Among some specimens of this local insect recently taken by me here, is one exhibiting the following abnormal structure: its right antenna has the four basal joints almost as usual in the species, only rather thicker and more compressed; the 5th joint is compressed, obconic, formed apparently of two aborted joints, ankylosed laterally for more than their lower half, and the right-hand one of which gives off a palpiform

appendage of three longer joints. From the left-hand of these two aborted joints, and apparently in continuation of the main body of the antenna, a bifurcate appendage proceeds, composed as follows: the normal 6th and 7th joints are much increased in width and almost entirely amalgamated, the 7th being apparently formed of two aborted and laterally anchylosed joints similar to (but larger than) those representing the 5th joint, and giving off on its left two joints similar to those proceeding from the right of the 5th joint, and on its right, evidently forming the true completion of the antenna, four joints, rather shorter and wider than the usual apical articulations, but with the apical joint itself not so wide in the middle or so large as the apical joints of the two supplementary appendages. In other respects the individual seems of the normal structure.—R. LAWSON, 58, St. Thomas Street, Scarborough: April, 1872.

Tachyporus nitidicollis in a midland County.—I took this handsome form of the common *T. obtusus* at Sherwood, in 1871, having formerly only observed it at Killarney.—J. R. HARDY, 118, Embden Street, Hulme, Manchester: Feb., 1872.

Captures of Coleoptera in the Manchester district during the past winter.—A remarkably mild and sunny day in the third week of January tempted Mr. Morley and me to set out with the intention of visiting our favourite hunting ground, Drinkwater Park, where we had taken in December *Choleva spadicea* and *Agathidium rotundatum* and *convexum*, in addition to other species previously recorded from that place; but on this occasion we were tempted to try a haystack on the way, and were well satisfied with the result, as beetles were so numerous and lively that in the course of an hour or so our bags were full, and we were returning home to examine their contents. Amongst them, we were pleased to observe for the first time *Acidota cruentata*, leisurely walking off the paper, *Homalium Allardii*, *H. oxyacanthæ*, *Cryptophagus setulosus*, *saginatulus*, *affinis* and *distinguendus*, *Ptinus crenatus*, and many of the usual haystack species.

Afterwards, in the corner of a low swampy meadow, at the foot of a plantation adjoining the late Aspinall Turner's Estate, on sifting dead leaves, we were surprised to see *Gymnusa variegata* in numbers, accompanied by its brother *brevicollis*, in no hurry to get away, as the day was dull and frosty: among the dead leaves we also found *Bythinus puncticollis*, *Ocyusa maura*, *Homalota insecta* (*sulcifrons*, Wat. Cat.), *occulta*, with a dark-legged variety, *fusco-femorata*, *divisa*, *Thomsoni*, *angusticollis*, *autumnalis*, *villosula*, *sordidula*, and the north country *eremita*, *Encephalus complicans*, *Gyrophæna nana*, *Homalium exiguum*, *Agathidium nigrinum*, *Phyllotreta tetrastigma*, &c. Lower down, under the decayed and frozen reeds, eighteen species of *Stenus* occurred to us, the majority in the greatest abundance, including *cicindeloides* (not previously observed by us in this district) and a few *opacus*, *Tachyusa atra*, and *Anchomenus gracilis*, including an interesting var. with short antennæ (this species emits a very disagreeable odour when captured). Cutting tufts yielded, amongst other things, more *Gymnusa*, which by the way has been taken by other Manchester collectors in the same manner in winter.

On reaching home we found in the bag *Bolitobius inclinans*,—a nimble-footed creature that would never allow itself to be so easily captured in warm weather.—W. BROADHURST, 46, Ellor Street, Pendleton, Manchester: March, 1872.

Capture of Pentatoma juniperina, Lin., &c.—Yesterday, I went to Caterham Junction, to hunt for *Sehirus dubius* in the moss which grows under the juniper bushes; and did not get it. But I found a more welcome species, *Pentatoma*

juniperina, one of the scarcest and prettiest of the British *Hemiptera*, for which I had often sought in vain, and which I certainly did not expect to meet at this season, seeing that the time of its appearance is given as July and August. It would seem, therefore, that it is a hibernating species.

I also obtained *Eremocoris erraticus* (3), not a common species. *Peritrechus luniger* was abundant, in fact, the most numerous species; while of *Drymus sylvaticus*, usually a nuisance, I saw but two.—J. W. DOUGLAS, Lee: 17th March, 1872.

Query as to the effect of temperature upon the development of butterflies.—I am anxious to find out—for a work on which I am at present engaged—what relation temperature has to the distribution of *Lepidoptera*, and should be exceedingly obliged to anyone who “breeds” extensively, if he will note for me the lowest temperature at which the ova hatch, and at which the imagos are disclosed, in various species. I should be glad to know these particulars as regards any species, but more especially in the following butterflies:—*Thecla quercus*, *Vanessa Io*, *Pararge Egeria* and *Megara*, *Lycæna Agestis* and *Artaxerxes*, *Colias Edusa*, *Pamphila Sylvanus* and *Nemeobius Lucina*. Of course, the temperature noted must be that of the box in which the ova or pupæ are.—F. BUCHANAN WHITE, Perth: April, 1872.

On the habits of Eupithecia subciliata.—English Entomologists imagine that the larva feeds upon maple. According to an old note, the larva was found on the 30th March, 1852, on oak; but whether in the buds or otherwise, is not stated. As the allied *tenuiata* is also found at that time of year, the statement carries with it much probability.—C. DIETZE (in the “Stettiner entomologische Zeitung,” 1871, p. 210).

[We incline to the opinion that the English Entomologists are right nevertheless, and that the larva of this species is in some way connected with *Acer campestre*. Herr Dietze finds 53 species of *Eupithecia* in the neighbourhood of Frankfurt-on-the-Main and Wiesbaden.—Eds.]

Note on the food-plant of Anerastia farrella.—I hear that Dr. Schleich is breeding this insect by scores. He had noted a sandy locality where the larvæ were feeding on *Anthyllis vulneraria*, and in the winter obtained hundreds of the hibernating larvæ in their sand-balls, by simply passing the sand through a sieve. In the spring, the larvæ quit their sand-balls to crawl about and seek a snug corner for pupation, and either form elongate cocoons in the sand, or spin up in a corner of the box in which they are confined. This insect, originally taken near Yarmouth, in Norfolk, has since occurred in Belgium, in Pomerania, and also on our own coast at Deal. It probably may be found wherever the *Anthyllis* grows on sand-hills.—H. T. STANTON, Mountfield, Lewisham, April 10th, 1872.

On the relation between generic and specific names.—Owing, I will suppose, to the brevity of my note on this subject at p. 254 of this Magazine, I appear to have failed in conveying to Mr. Dunning (and so probably to others) the meaning I had intended to express, and will therefore say a little more on the subject.

The main point I wish to establish is this, that the specific or trivial name is, according to the laws of ordinary language, a noun; and that, therefore, it is quite unnecessary it should be changed in gender, when moved from a masculine-named to a feminine-named genus.

It is clear, according to the laws regulating the formation of language, that the question whether a given word is a noun, adjective, or verb, depends not upon the source from which it is derived, but the use to which it is put. I am not

sure whether Mr. Dunning appreciates this distinction or not, for he quotes (though apparently only with partial approbation) the Dresden Congress of 1858 to the contrary.

It is equally clear, that, if use and not derivation determine the part of speech of a word, all specific names must be of the same part of speech, for they are all put to the same (*i. e.*, an equivalent) use.

There cannot be any question of a specific name being a verb or preposition, or, in short, anything but a noun or adjective.

The question under discussion then seems to me to be whether all specific names are nouns or adjectives.

What, then, is in language the distinction between noun and adjective?

The distinction between the two is, to a great extent, that between the objective and the subjective, and the ordinary definition is, that an object is a noun, and that a quality or condition is an adjective.

It seems to me beyond doubt that the specific name is that of an object, and therefore is a noun.

This conclusion seems to me to be irresistible, from a logical point of view, and almost as strong from a practical point of view.

The habit alluded to by Mr. Dunning, of using the specific name without the generic name, illustrates this: when a man says he has taken "*littoralis*," it is pretty clear he must refer to an object (even if the particular object be uncertain), for the capture of a bottleful of adjectives would not be more conceivable, than of a bag full of moonshine.

Mr. Dunning says that "*niger*," when used as a specific name, does not "indicate a certain definite object (*i. e.*, is not a noun)"; and he attempts to enforce this by asking whether it indicates *Gobius niger* or *Hyoscyamus niger*. But this is entirely beside the mark. Is "*Turkey*" not a noun, because, when written without context, I do not know whether it refers to a bird or to a country?

Again, Mr. Dunning says that the generic and specific names together constitute the name. This is quite true; but, unfortunately, does not assist us in arriving at any conclusion as to how we shall treat the two when temporarily sundered; this being just the very point under discussion. The specific name having to be divorced from the generic name for certain purposes, how shall we treat it on its own merits? I answer, always as a noun—and as a particular instance mention that it is no more necessary to change the masculine *Minimus* to the feminine *Minima* when moving it from a masculine-named genus to a feminine-named genus, than it is to change the masculine name *Adonis* for a feminine name when it undergoes a similar transmigration. The conclusion is based upon the hypothesis that, as names of species, *Minimus* and *Adonis* are the same part of speech, and I have been induced to put forward my reasons for so thinking, because I consider that this conclusion, if adopted, will help, if only a little, to that "consummation most devoutly to be wished," a zoological nomenclature free as a whole, and in its separate parts, from reasons for changing it.—D. SHARP, Eccles, Thornhill, Dumfries: April 2nd, 1872.

[As the discussion of this subject need not apparently be continued beyond the usual answer to a rejoinder, and should, at all events, be completed in the volume in which it was commenced, we have departed from our usual course, by allowing Mr. Dunning a perusal of Dr. Sharp's remarks before printing them.—Ens.]

On the relation between generic and specific names.—Dr. Sharp's meaning was clearly enough expressed in his former communication, and, if I have failed to shew that his view is erroneous, it was not from any want of perspicuity on his part.

The main argument on the former occasion was, that the specific name is the real basis of zoological nomenclature, and that the generic name was a secondary affair, much more adjectival than the specific name. To this argument I addressed myself, and endeavoured to shew that the generic name is the primary, and the specific the secondary name.

I accept Dr. Sharp's statement of the question under discussion—Are all specific names nouns, or are they all adjectives?

He thinks it beyond doubt that every specific name is a noun. And the reason he gives for his belief is, that the specific name is the name of an object.

My answer was, and is, that the specific name is not the name of any object. The generic name is the name of the object, and is a noun substantive—as *Juniperus*, the juniper. But there are several junipers, and to distinguish between them, we must add something to the noun substantive; we *put to* the noun *Juniperus* the words *communis* and *nana*, and these adjectives (or words 'put to') are the specific names.

I beg to repeat my former enquiry. In the names of "the common juniper" and "the dwarf juniper," are *common* and *dwarf* nouns substantive or nouns adjective? If adjectives, are not *communis* and *nana* adjectives likewise?

If I may be allowed to cite my own words "Each genus has its name, which is a noun substantive; and the species is marked by the addition of some epithet to the name of the genus—by the addition of another word, which may be, but is not necessarily, a noun substantive; which in fact is more frequently an adjective; and which, when a substantive, is epithetic, or used adjectivally," or, I might have added, "figuratively."

Thus, when we give the specific name *taurus* to an *Onthophagus*, we do not mean that the beetle is a bull, but only that it possesses some quality which induces us to liken it to a bull, or to speak of it figuratively as a bull. And when we name a butterfly *Polyommatus Adonis*, we (by a well-known figure of speech) personify the beauty of the insect, and call it by the proper name of one who was remarkable for the possession of that same quality of beauty. And it is manifest that specific names which are the genitive or possessive case of a noun substantive, as *Angliæ* or *Spinolæ*, are adjectival.

Taking then the term "adjective" as including words which in form are nouns, either in the nominative or genitive case, but which, like the instances mentioned, are used adjectivally, I think it beyond doubt that every specific name is an adjective.

As Wocke has it, "The name of the genus is the substantive, the name of the species is always an adjective, even though it express the name of a person or a place."

If every specific name were a substantive, then, since any substantive may (so far as language is concerned) be adopted for the name of a genus, it would follow that every specific name might be taken for the name of a genus. But would any one venture to propose *Angliæ* or *Spinolæ* as the name of a new genus? And if not, why not?

Dr. Sharp appeals to the practice of using the specific without the generic name as an argument in favour of his contention. Holding the view I have indicated of the practice, he can scarcely expect this appeal to convince me, whatever effect it may have upon others. No doubt, when a man says he has caught "*littoralis*,"

he means to refer to an object; my complaint was, and is, that the reference is incomplete; it is precisely because he *does* tell me that he has captured a bottleful of adjectives, and nothing more, that I venture to protest; Dr. Sharp's answer to my protest is, in effect, that because the man meant to indicate something, therefore he must have done it,—because he meant to give some information, therefore he must have given it! It is as if I were told by a man that he had shot one "green," caught two "spotted," and plucked three "large:" and I suppose it is expected of me to believe, that the name of that man is *Sapiens*!

In the latter part of his note, Dr. Sharp says the point under discussion is, how to treat the generic and specific names when temporarily sundered; but, with submission, this is not the point under discussion. The point is, whether the specific name is an adjective or a substantive; whichever it is, it retains the same character whether it be joined with or temporarily sundered from the generic name—though my contention is that the two never ought to be sundered. Of course, a species may be transferred from one genus to another, and when so transferred the specific name goes with it. But what I mean is, that the specific name ought not to be treated as having a separate and independent existence; the moment it is severed from one generic name, it is or should be at the very same moment joined to another; I do not recognize such a thing as a specific name unattached; the question is not how to treat the specific name apart from the generic or how to treat the two when sundered, but how to treat them when united.

Dr. Sharp admits that the generic and specific appellations together constitute the name; and this is something gained, for in his former paper he seemed inclined to overlook this. In truth, the radical mistake (or what I conceive to be the radical mistake) which pervades the whole of his argument is this, that he loses sight of the distinguishing characteristic of the binominal system, and throughout regards the secondary or trivial name as if it were identical in character with the name, *i. e.*, the whole name, in a uninominal system. His contention is, *Niger* denotes a certain object, and is the name of a definite thing; and therefore it is a noun substantive. My contention is, that, according to the Linnean system of nomenclature, the trivial appellation *Niger* does not denote a certain object, and is not the name of anything.

Undoubtedly I denied Dr. Sharp's statement that *niger*, when used as a specific name, indicates a certain definite object; but my friend is in error in attributing to me the argument that *niger* is not a noun simply because there might be more than one object bearing that name. He enquires, Is Turkey not a noun because both a bird and a country are so called? Certainly, turkey is a noun. But is it a specific name? If not, the illustration fails. No doubt many objects may be called by the same name, which is none the less a noun on that account. And *Niger*, if chosen as a generic name (though the selection would, for obvious reasons, be an unhappy one), would doubtless be a noun, and none the less so, if there were two genera, each so called; though the name would not be retained for both, at least if both belonged to the Animal Kingdom.

As on the previous occasion, Dr. Sharp's last paragraph perplexes me; the *Adonis* passage is as bad as the "universal grammar." It passes my comprehension how the learned Doctor can gravely institute a comparison between changing *minimus* into *minima* to make it agree in gender with the generic name, and changing

the masculine proper name *Adonis* (used figuratively, as above explained) into a feminine name when it is removed from one genus into another. If the article had been anonymous, I should have attributed it to some one who had forgotten the advice of Cobbett, "Never write about any matter that you do not well understand." But the signature precludes such an idea, and the lengthy consideration I have given to the theory propounded by my friend is, I trust, sufficient proof of the respect I entertain for all he writes. The only conclusion I can come to is that the *Adonis* passage cannot be seriously intended; it must have been meant for a joke.

To conclude, specific names have from the introduction of the Linnean system down to the present day been universally regarded as adjectival, and certainly they were essentially so in the contemplation of the author of the system. Dr. Standinger now proposes to consider them as proper names, apparently for no earthly reason but to afford a cover and cloak for the blunders of those, who are either too ignorant to know, or too careless to enquire, the proper gender of the generic names they use. "As long as the scientific names of plants and animals are to be Latin, we have a right to require that they do not sin against the simplest laws of that language" (Thorell, Nov. Act. Soc. Sci. Upsaliensis, ser. 3, vol. vii, p. 13). But now that Dr. Standinger has obtained the support of Dr. Sharp, I suppose the nomenclature of Lepidoptera and Coleoptera will (to employ again the words of Thorell) "gradually assume an appearance absolutely disgusting to a person possessing even the slenderest classical attainments."—J. W. DUNNING, 24, Old Buildings, Lincoln's Inn: April 8th, 1872.

Obituary.

François Jules Pictet.—Early in March, Natural Science lost one of its most shining lights by the decease, at Geneva, of Professor Pictet (Pictet de la Rive) in his 63rd year. For many years past he had worked but little at Entomology, having devoted himself more exclusively to Palæontology, in which branch of study he had acquired a fame possibly eclipsing that earned by him as an entomologist in his younger days. He at first devoted himself almost entirely to *Neuroptera*, and his earliest published paper was written when only in his 23rd year, followed two years later by his well-known '*Recherches sur les Phryganides*,' a work which, even if he had stopped his investigations, would have stamped him as one of the most acute observers and anatomists Europe has produced. This work was succeeded by his masterly Monographs on the *Perlida* and *Ephemerida*, and by many shorter papers. For a list of his entomological works, we refer our readers to Hagen's '*Bibliotheca*,' from which the only omission we have detected is a '*Note sur les étuis de Phryganes envoyés de Brésil par M. Blanchet*,' published in the '*Bib. Univ.*,' v, 1836, pp. 198—200, under the initials "F. J. P." Pictet's bent of mind no doubt attracted him more to investigations of habits and anatomy, than to subtle questions of specific differences, and, from this cause, the identification of his species is sometimes difficult, especially in his '*Phryganides*.' But, with few exceptions, most of the points in dispute have been satisfactorily settled: and it must be remembered that he worked before Rambur had opened up a new field in Neuropterology by his investigations of the sexual organs in those insects. Pictet belonged to one of the oldest and most wealthy of Swiss families, and devoted his life to the disinterested advancement of Natural History. But, by his

countrymen, he was not the less respected as a public man, and his native town of Geneva marked its sense of the loss it had sustained by a day of mourning for his decease. The illness which terminated so fatally was supposed to have been induced by a fall during a frost when he was attending some public conference at Berne. His death causes a vacancy in the List of Honorary Members of the Entomological Society. The father's earlier footsteps in the field of entomological science have been worthily followed by his son, A. E. Pictet, who, a few years since, published a valuable work on the *Neuroptera* of Spain; let us hope this may not be his last! And, as an entomologist, his reputation has been equalled, if not exceeded, by that of his well-known nephew, Henri de Saussure.

Charles Horne.—This gentleman died at his residence at Norwood on the 21st of March, in his 48th year. We are unable to give any particulars of his early life, but he passed many years in India in the Civil Service, and latterly in the capacity of judge. His extensive collections and notes were almost all destroyed during the Mutiny, and soon afterwards he retired from the service and settled in England, devoting himself to horticulture and natural-history pursuits. At the Meeting of the Entomological Society on the 18th ultimo, he took a prominent part in the discussion, and appeared in robust health; two days later he was seized with paralysis, when attending a Meeting of the Horticultural Society, and died next day. Mr. Horne's knowledge of the habits and œconomy of insects was very extensive, and a valuable paper by him on the habits of certain species of Indian *Hymenoptera* has recently been published in the Proceedings of the Zoological Society. Only a few days before his death, he had been elected a fellow of the Linnean Society.

Newcastle-on-Tyne Entomological Society.—This Society held its second Anniversary on Tuesday, the 13th February last, in the Curator's Room of the Natural History Society's Museum: W. MALING, Esq., President, in the Chair.

The Secretary read the report, which showed the Society to be in a prosperous state, a good balance having been left in the hands of the Treasurer, and several new books purchased during the year. The Society now numbers 36 (including three Honorary) Members.

Amongst other matters brought before the Members, was the publication of a local list at some future time.

After the election of officers, one new Member was elected.—J. HAMILTON, Secretary, 13, Union Street, Newcastle-on-Tyne: 20th February, 1872.

ENTOMOLOGICAL SOCIETY OF LONDON, 18th March, 1872.—F. SMITH, Esq., Vice-President, in the Chair.

R. Meldola, Esq., of Brentford, was elected a Member.

Mr. Higgins exhibited some beautiful species of *Cetoniidae* from Java.

Mr. Bond exhibited an example of *Acronycta leporina*, one side of which had the typical colour and markings, the other side having those of the variety known as *bradyporina*, the two forms having been considered at one time as distinct species.

Mr. Smith said that the discussion at the last Meeting concerning Siberian

insects had induced him to examine specimens of the common hornet from Europe, Siberia, and North America, and he had found them absolutely specifically identical, even in the form of the genital organs.

Mr. Müller read notes on *Serropalpus striatus*, which he used to take near Basle in the neighbourhood of the timber-rafts, and stated that M. Knecht had taken 200 examples from pine-wood in Alsatia. In Switzerland it had also been obtained from alder. He considered its occurrence in a bundle of hose in Leicester (*cf.* Ent. Annual, 1872, p. 76) as purely accidental.

The Secretary read a long account of the ravages of Locusts in South Australia in December, 1871, as detailed in the 'South Australian Register' for January 2nd, 1872. The insects were described as appearing in swarms that darkened the air, eating everything in their way, and preyed upon by birds that accompanied them. The leaves of the castor-oil plant were extremely fatal to them, and larkspur was also inimical. The introduced thistle was left untouched. Mr. Horne related his experiences of the ravages of locusts in India, where they were preyed upon by every animal, including domestic cattle and man. The castor-oil plant had no effect upon the Indian species, but the leaves of the tamarind-tree acted as a powerful purgative upon them.

1st April, 1872.—Prof. J. O. WESTWOOD, M.A., F.L.S., President, in the Chair.

The death of Prof. Pictet, one of the Honorary Members, was announced.

Prof. Westwood exhibited a large woody gall found on the ground under an oak (which Mr. Müller considered the production of *Cynips radialis*). He also alluded to the specific differences existing in the genital organs of various species of *Cynips*, and exhibited drawings of the same from microscopic examination. He further exhibited drawings of the antennæ of various species of Fleas, which showed remarkable differences of structure, and, in expressing his conviction that the *Aphaniptera* formed a distinct order, remarked that they were as nearly allied, in his opinion, to the *Coleoptera* as were the *Strepsiptera*. Finally, he exhibited drawings of a minute parasite, belonging to the genus *Coccophagus*, which had been bred by a correspondent from the *Coccus* so common on the rind of oranges: he remarked that now was the best time to obtain the male of *Coccus*, and especially of the species that infested espalier pear-trees.

Mr. Müller read notes on the habits of *Anaspis maculata*, which he had bred from woody excrescences in the trunks of birch.

Mr. Butler read additional notes on the *Pericopides*, referring especially to those recently described by Dr. Boisduval.

Mr. McLachlan read a paper on the external sexual organs of the genus *Acentropus*, in connection with the question of specific differences in the genus, and exhibited drawings of the apparatus, made under the microscope. After having detailed the slight differences existing in specimens from various parts of England and the Continent, he came to the conclusion that there were not sufficient characters in these organs alone to warrant the opinion of a multiplicity of species, especially if compared with the differences existing in allied species of *Neuroptera*; but he reserved an opinion on the remarkable discrepancies of alar development shown in both sexes, and especially in the females, from different localities.

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ERRATA.

Page 13, line 11 from bottom, for "striæ" read "stria."	
" 62, " 4 " top, " "Sätl" " "Stål."	
" 108, " 25 " " " "reveral" read "several."	
" 147, " 14 " " before "at" insert "except."	
" 203, " 9 " " for "elavatis" read "elevatis."	
" 246, " 4 " bottom, " "Buck" " "Breck."	
" 272, " 18 " top, " "and" " "var."	
" 275, " 19 " " "species" " "specific."	
" " " 12 " bottom, " "name <i>Lycana</i> " read "name of the <i>Lycana</i> ."	
" 276, " 14 " top, between "part" and "of," insert "of the name."	

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JUNE, 1871.

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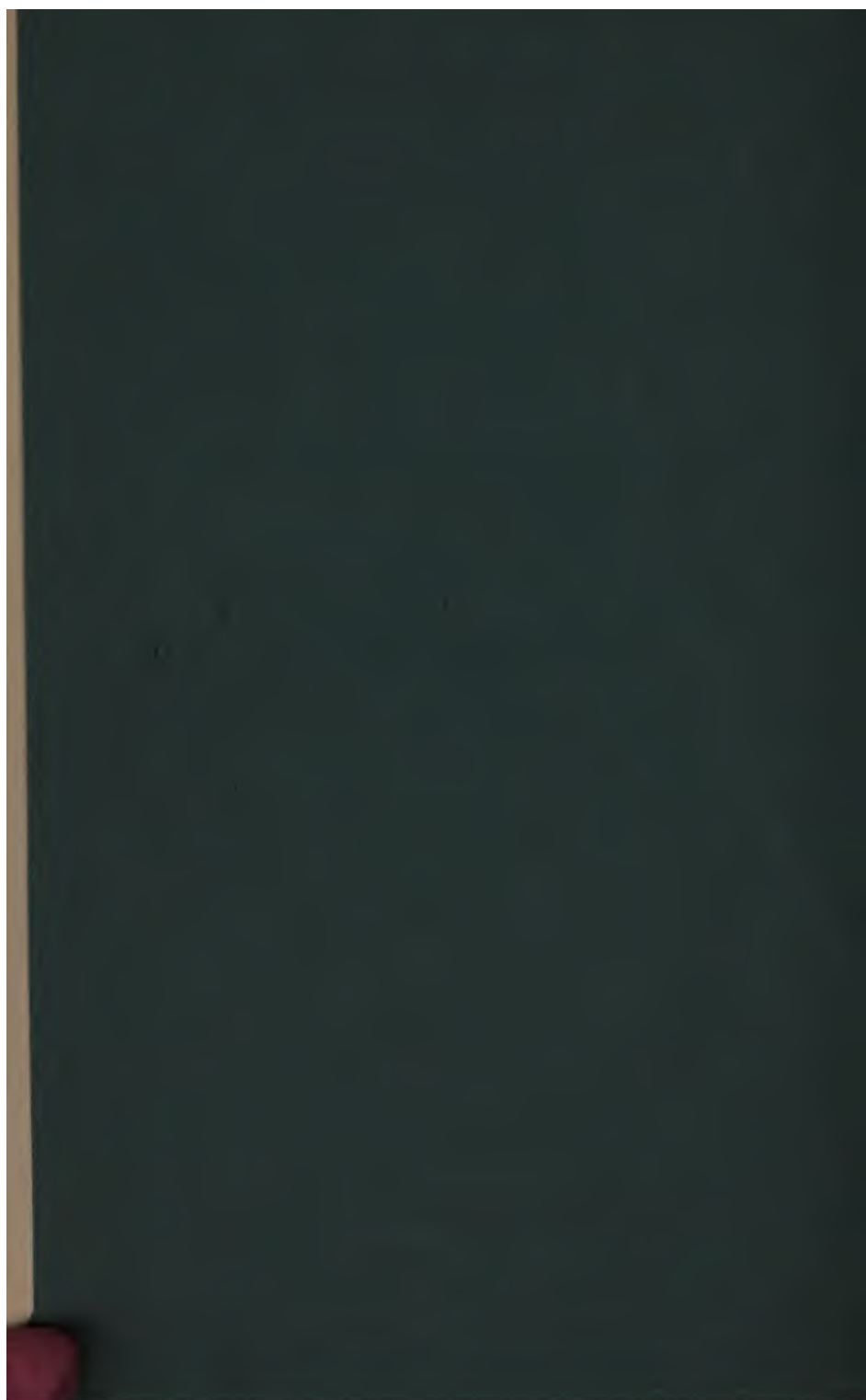
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The length and interest of some of the articles in the present No. have unavoidably deferred the publication of several communications.

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TO CORRESPONDENTS.

Mr. Bidge's paper on Nomenclature, Mr. Doubleday's List of Epping Dragon-flies, Mr. Bond's *Chilias Cinctoides*, Dr. White's observations on *Hygostomus*, *Mesochorus*, *Peritissus*, *Hylina*, and Buckler's descriptions of larvae, and other shorter notes, unavoidably stand over till next number.

Subscribers who have not yet remitted, are requested to refer to the notice on Cover of June No.

NOTICE.

The Editors will be glad to hear from any one having a copy of Vol. i of this Magazine, either bound or in parts, to dispose of.

Vol. i is out of print, and Vol. ii can now only be obtained by purchasers of the set of succeeding Vols. The Editors may occasionally have a copy of Vol. i; and those gentlemen who may purchase sets, excepting Vol. i. and who wish to have that Vol., are recommended to make application to them.

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The following information is of interest to Entomologists, with regard to mailing boxes of insects by post. We believe the rates will come into operation in August; but due notice will no doubt be given by the authorities. The scale will be:—For parcels and letters of all sorts, closed or open, making no distinction between them, as follows:—Not exceeding 2 oz., 1d.; above 2 oz., but not exceeding 4 oz., 1½d.; above 4 oz., but not exceeding 6 oz., 2d.; above 6 oz., but not exceeding 8 oz., 3d.; above 8 oz., but not exceeding 10 oz., 4d.; above 10 oz., but not exceeding 12 oz., 5d.; above 12 oz., but not exceeding 14 oz., 6d.; above 14 oz., but not exceeding 16 oz., 7d.; above 16 oz., but not exceeding 18 oz., 8d.; above 18 oz., but not exceeding 20 oz., 9d.; above 20 oz., but not exceeding 22 oz., 10d.; above 22 oz., but not exceeding 24 oz., 11d.; above 24 oz., but not exceeding 26 oz., 12d.; above 26 oz., but not exceeding 28 oz., 13d.; above 28 oz., but not exceeding 30 oz., 14d.; above 30 oz., but not exceeding 32 oz., 15d.; above 32 oz., but not exceeding 34 oz., 16d.; above 34 oz., but not exceeding 36 oz., 17d.; above 36 oz., but not exceeding 38 oz., 18d.; above 38 oz., but not exceeding 40 oz., 19d.; 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Mr. RYE has in his possession a small deal post-box, stained black, containing some British *Colaspia* (chiefly *Brachylepta*) sent to him for names during the past summer, at a time when he was too busy to attend to entomological matters. He has, unfortunately, suffered the boxes that accompanied it; and, all enquiries (both personal and by letter) having failed, is compelled to publish this notice, in the hope of discovering the owner of this box.—19, Lower Park Field, Putney, S.W.

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Numerous papers of interest unavoidably stand over through pressure of matter, and the Editors are also compelled to defer the consideration of papers on communications received by them.

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He died suddenly, of apoplexy, on Monday, the 18th December; a notice of his life and works will probably appear in our next.

ERRATUM.

p. 171, line 2, for 'single dark brown hairs' read 'single setæ.'

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TO CORRESPONDENTS.

The shortness of the space at our disposal for the present. Now, and the necessity of concluding thereby the discussion on the relation between generic and specific names, compels us to defer the publication of papers and observations by Messrs. C. Ward, W. Greville, C. W. Dale, Dr. U. A. Hagen, R. Hutchinson, A. Miller, G. T. Perrett, T. V. Wolfson, and others, already written in press.

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